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Dive Guide 1996/1997

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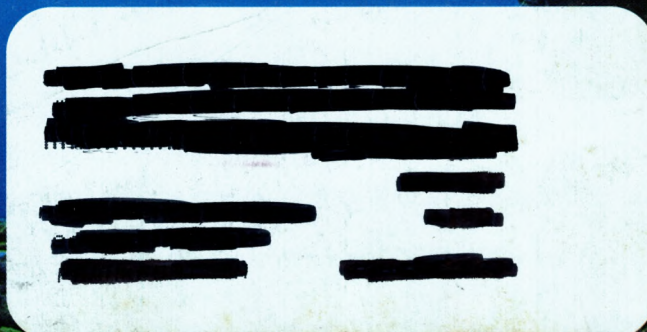
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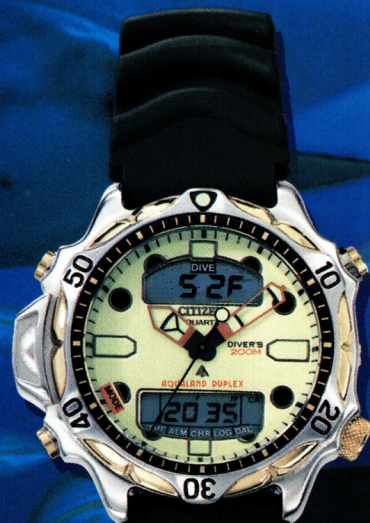
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Water Politics

BY BILL GLEASON



As this issue comes into your hands, our four year fascination with electoral politics will be at a fever pitch. For the past several months, our elected officials (and hopeful candidates) have promised us the world in exchange for our votes. We are told the IRS will cease to exist in its present form, the economy really is strong and Americans are better off (or not) than ever before. These familiar themes are more interesting for what they don't deliver than what they do.

At the core of our political process is the right to vote. While it may be inconvenient at times to exercise that right, it is our fundamental control over the political process. And, while that overall process is easy to condemn and criticize, it is still the most perfect form of government as long as you realize government is essentially imperfect! When we visit the polls, we will be faced with an array of local, state and national choices. And, while major issues may provoke strong sentiments, the water world we explore has seldom been an issue in this particular election year. Of course, all candidates are pro-environment and all promises are couched in glittering terms. How does a diver separate fact from fiction or campaign promises from performance? Rather than endorsing particular candidates, we offer a list of concerns you might want to question all your potential office holders about. These concerns are of interest to divers and sport enthusiasts and, while every candidate seems to have an environmental platform, few seem to be spending very much time standing on it.

In the national and state elections, voting along party lines often negates campaign promises. It even puts politicians in situations where they vote exactly the opposite of what they campaign for. This is the essence of politics, the ultimate form of deal making, done with convincing sincerity in the glare of television lights. With the national issues, here are a few points to consider:

CLEAN WATER: This is the the most im-

portant environmental issue facing us today. Wetlands management, toxic dumping and a host of other factors all contribute to basic water quality. Check how the candidates reacted to the Magnuson Act and how they voted on clean water issues over the years. If it's strictly along party lines, it's just idle campaign promises. If they are strong candidates for cleaner water, nudge them a little closer to getting your valuable vote.

COMMERCIAL OVERFISHING: After clean water, the wanton destruction of fishing grounds by commercial interests threaten to permanently upset the cycle of life in every major body of water. Fishing should be a sustainable and renewable resource. Take as much as you can each year without compromising the ability of the sea to replace it. This type of logic is usually doomed in the political and business arenas and, while we are usually not very fond of government intervention in any way, this issue is an exception. In a better world, perhaps commercial interests would act out of a balanced sense of self-enlightenment. In the continued absence of environmental awareness in this area, stronger fishing controls are an absolute must!

GOVERNMENT CONTROL OF RECREATIONAL ACTIVITIES: Although there are no pressing issues in this area of national politics at this particular time, legislation in other areas continues to restrict us in our outdoor activities. Frivolous lawsuits drive up the cost of recreational equipment and operators are faced with increasing amounts of "cover your butt" paperwork to prove to courts they took you diving safely. With stronger individual rights, the determination of whether someone took you diving safely would rest with you, not the legal community, and we would all be spared the additional cost and burden of endless waivers. Plus, with stronger individual rights backing our actions, we—rather than operators and others—would assume responsibility for where, when and how we dive. This is very much like responsible diving, a familiar theme on these pages. Perhaps we need a Responsible Politics campaign. Responsibility in politics, however, usually refers to the ability of an elected official to live up to a deal, not a

campaign promise.

While it's tempting to overlook the importance of your vote when literally millions of others appear to be voting the same way, when it comes to local elections there's a much greater opportunity to effect change. And, the battles over clean water and overfishing, while often waged in Washington, D.C., will probably be won through pressure and action initiated on a local level. Of significant interest, across the board are:

WETLANDS CONSERVATION: Overdevelopment, often in the hands of local zoning and building commissions, threatens mangroves, marshes and other types of coastal wetlands. Wetlands are intrinsically linked to the sea and their health is absolutely vital to the rest of the ecosystem. Play hardball on any wetlands issue.

NO HARVEST ZONES: Here's a tough one and it could get you embroiled in an argument across the fence from your fishing neighbor. The cutting edge in marine fisheries management strongly urges the creation and maintenance of large areas that allow no harvesting of any type, commercial or recreational. While this means no spearguns, it also means no line fishing, trawling or grabbing lobsters or abalones. Properly managed, this is the best defense for the sea. Even improperly managed—a more realistic outcome—we would be better off than at the present. Check whether local action is in conjunction with national no harvest goals and put that in the electoral mix as well.

WASTE MANAGEMENT: One of the most local of issues, this one deals with everything from sewage to storm drain runoff and, from a diver's point of view, these local and state activities need to be strengthened dramatically. Please include aggressive action on these goals as part of your basic decision this month.

When you prepare to cast your vote please remember the oceans as well as other pressing political concerns. While sensitive issues often grab the headlines and polarize voters, they can and often do overshadow issues of equal worth that might be realistically accomplished. Many of the ocean/water issues fall into this second category and about the only way change will happen is with your vote. Please use it wisely. 🐟

skin diver

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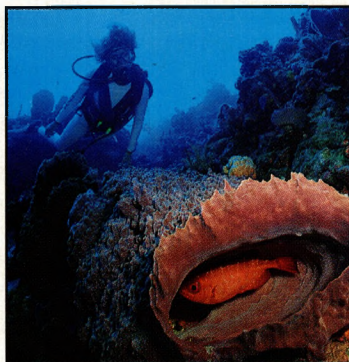


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Guam, Yap and Palau...
Unforgettable diving wonders

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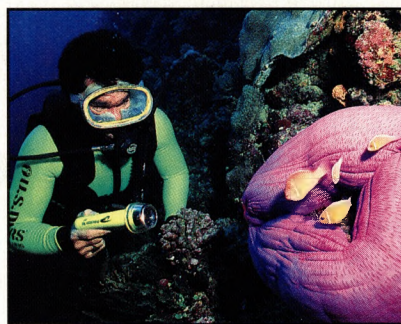
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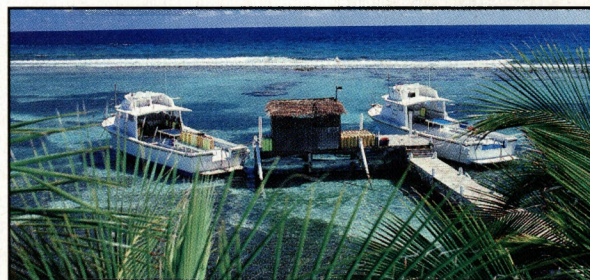
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WESTERN FIJI ►

Fabulous diving and
fun for all

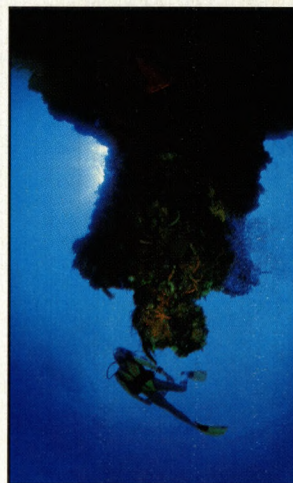
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ABOUT THE COVER: A Manta Ray (*Manta birostris*) glides over a cleaning station at Yap's Valley of the Rays. Mantas, which can weigh close to two tons and reach wingspans of 22 feet, have distinctive patterns on their undersides that can be used for identification. For more on manta diving, see the Western Micronesia section on page 88. Photo/Geri Murphy.

The Spotted Wobbegong

(*Orectolobus maculatus*)

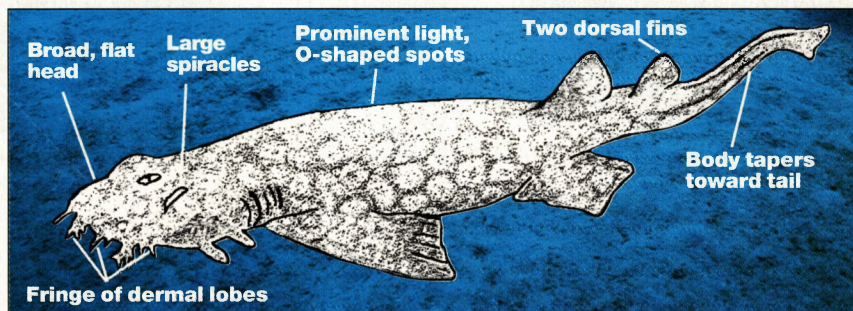


BY BONNIE J. CARDONE
PHOTOGRAPH BY MARTY SNYDERMAN

The 7 families and 33 species that comprise the shark order, Orectolobiformes, include some of the most bizarre fishes on earth. Their names provide the first clue: Whale, Zebra, Carpet, Blind, Bamboo, Nurse and Wobbegong. One member of this order—the Whale Shark—resembles a giant domino. The Wobbegongs, the subject of this article, look more like exotic throw rugs than sharks!

However diverse their appearance, the Orectolobiformes do have common characteristics. Their heads are broad and blunt, there are nasal barbels in front of the mouth, grooves between the nostrils and the mouth, eyes above and behind the mouth, spiracles, two dorsal fins, one anal fin and five gill slits. Orectolobiformes means “stretched out tail” and the bodies of all of these sharks taper toward the tail.

The Wobbegong was named by Australian aborigines. The Spotted Wobbegong (*Orectolobus maculatus*) shown here, photographed by Marty Snyderman at a site known as Seal Rocks, north of Sydney, Australia, is one of four species in the genus. (Its close cousin, the Ornate Wobbegong, was featured in October 1994.) The Spotted Wobbegong was so named for its large O-shaped, light markings. Although Wobbegongs have been found as deep as 361 feet, most of these sharks “occur




in shallow, tropical waters, primarily in the Indo-West Pacific, and especially along the coast of Australia” (*Sharks in Question: The Smithsonian Answer Book*). The Spotted Wobbegong “may occur in water barely deep enough to cover it, and has been seen climbing over ridges between tidepools, with its back out of water” (*FAO Species Catalogue: Sharks of the World*).

The Spotted Wobbegong is thought to be nocturnal, thus is inactive during the day. Since it blends in so well with the bottom, it is also very hard to see. Experts are not sure whether Wobbegongs actually have to search for food or simply open their huge mouths and inhale edibles that wander unsuspectingly by or attempt to eat the shark’s dermal lobes, which resemble algae. The Spotted Wobbegong’s prey includes crabs, lobster, octopuses and bony fishes.

Spotted Wobbegongs can grow to lengths of 10.5 feet, although 4.9 to 5.8

This Spotted Wobbegong was photographed north of Sydney, Australia, at Seal Rocks. Its coloration, flattened body and dermal lobes act as camouflage, allowing it to blend in with the bottom.

feet is more common. Males are thought to mature at about two feet. The Wobbegong’s powerful jaws and rows of enlarged, fanglike teeth, two in the upper jaw, three in the lower, along with its size, make it a shark of which to be wary. It has been known to bite when molested or provoked, such as when speared or caught by fishermen and brought aboard a boat. Since it inhabits shallow water, there are reports of it biting people who accidentally stepped on it while wading.

Wobbegongs are ovoviviparous, which means the young develop in eggs that hatch in the female’s uterus and are then born live. The pups, sometimes as many as 37 from a single female, are just more than eight inches long at birth. 

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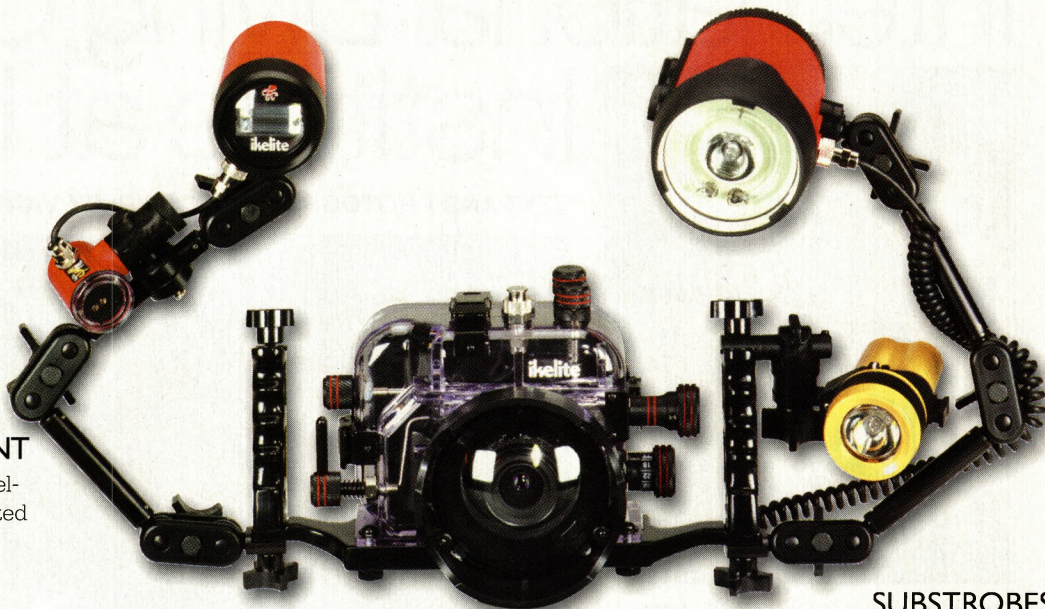


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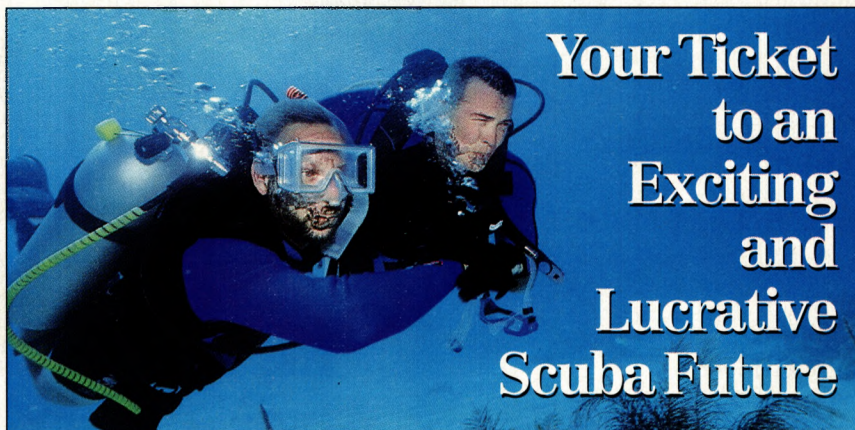
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Bob Brayman's International Diving Career Institute at Hall's



Above: Hall's instructional and support staff aboard *Lady Key Diver*. **Right:** Divers practice buddy breathing techniques.

TEXT AND PHOTOGRAPHY BY SHIRLEY VANDERBILT



Even if you've never traveled out of the country, had a scuba lesson or been on a boat before, Bob Brayman's International Diving Career Institute at Hall's can have you certified as a dive instructor and on your way to an exotic, far-away destination in just a few months! How's that for making your fantasy come true? And, if you're an experienced diver, you may be even closer to your goal. So, what's the catch? Aren't most training institutions now requiring you to be experienced as well as certified in order to enter the program? And, when you do finish your training, what are your chances of actually finding that dream job?

Fantasies are great for lifting our spirits and adding a little spark to our days. But, it's when you can live your fantasy that your life is really working for you, instead of you working for your life. Maybe you are one of those thinking, someday I'd like to be a dive instructor and live on a tropical island or travel the ocean on a cruise ship. Well, Hall's can help make that happen now, not someday. It's easier than you might think, because the people at Hall's have been doing this long enough to know just what you need to get from here to there. What you don't need is prior experience! And, when you have completed your training you'll be carrying with you the reputation that has made Hall's graduates among the most marketable in the industry.

The dive industry is continuing to grow by leaps and bounds, offering lucrative employment to people who want to have fun while earning a living. But, only those



Above: Student instructors prepare for a session in the Faro Blanco Marine Resort's Olympic sized freshwater pool.

with quality training and proficient skills will be able to compete for the best jobs. That's where Hall's comes in. Since 1992, Hall's training institute has had a government certified placement rate of 100 percent—which means all of its graduates have found their own special niche in the job market.

But, that's not all. Because of Hall's long established connection to the global dive community and the exemplary reputation of the school for producing outstanding professionals, graduates from this institution have consistently qualified for above average salaries and, in many

instances, been considered the first choice for employers.

More than 18 years ago, Bob Brayman took over an ailing little dive shop in the Florida Keys and began a process of dedication and hard work that has culminated in one of the finest recreational and dive career training centers in the country. With a concern for securing well qualified professionals for his newly acquired Hall's Diving Center, Brayman began training NAUI instructors, augmenting the standard curriculum with an emphasis on actual resort experience. Today the institute's focus goes beyond the NAUI certification awarded at the end of training to guide students toward the attainment of skills that will match their career goals. Apprenticeship is an essential part of the program, preparing students for many different aspects of the dive industry.

Let's say your fantasy destination is the typical tropical vacation paradise, complete with crystal clear waters, abundant marine life, balmy weather and lots of happy-go-lucky tourists. What you'll need to succeed is a professional resort instructor curriculum that includes actual hands-on boat experience; training in resort, open water and specialty certifications; probably some equipment repair; and, for safety's sake, certification as a Diving Accident Response Technician (DART).

Maybe your idea of paradise is owning your own dive shop in the heartland of America, training friends and neighbors and sponsoring an occasional trip to the wilds of the Caribbean or Pacific. You'll probably want to focus more on retail store



Above: Kari Agostino observes as John Minton demonstrates the intricacies of regulator repair. Right: James Hart analyzes enriched air at Hall's fill station.

management, business and marketing techniques, as well as equipment repair and maintenance. Hall's ten week training program for professional store and resort instructors provides it all: advanced and divemaster training; store and resort sales and operations; equipment repair; DART certification; instructor preparation; and full instructor training.

For most students, the program of choice is the full ten week residence. Beginning at the beginning is actually more significant than it sounds. Whatever your prior training, you'll find that Hall's exclusive copyrighted learning program and the daily evaluation system greatly enhance your performance by providing a well structured but very supportive environment. In addition to materials provided by NAUI, the institute also makes available a full resource library of workbooks, guides and videos. The instructional staff members further supplement the learning process with their wealth of experience in instruction, marketing, retail sales and resort operations. In addition to the advantage of actual resort apprenticeship, Hall's also emphasizes professional conditioning, such as daily laps in the training pool.

Graduates of the institute may walk out of the door with nearly 30 certifications, one of the most significant being equipment repair technician. Can you repair and reassemble a regulator in 90 minutes, with all parts working perfectly? After Hall's six day course, it will be a piece of cake, as well as an outstanding marketing tool for your resume. Within the retail division, students have contact with actual customers, practicing skills in



Above: John Minton reviews navigation techniques with students in an open air setting. Hall's quality training results in a 100 percent job placement record.



planning and organization of dive trips, registering students for classes, outfitting new divers and closing sales. Practical experience in record keeping, store display and rental procedures are also beneficial in preparing the instructor candidate for immediate employment.


For many of the institute's students, the most enjoyable part of the program is open water training. Dive sites in the heart of the Florida Keys, just off Marathon, have become the institute's underwater classrooms. Hall's Diving Center shares space along U.S. Highway 1 with the attractive Faro Blanco Marina and Resort, a complex that accommodates guests in everything from houseboats and marina slips to condos and cottages. To help students defray costs, a "share room" arrangement offers discounted nightly rates for roommates. Cottages sleep up to four and feature a mini kitchen, private bath, TV and telephone and access to the resort's facilities, including the Olympic sized pool and several restaurants.

Hall's 40 foot custom dive boat, the *Lady Key Diver*, has quick access to the open ocean from the marina's gulf side docks. The Florida Keys, known for prolific marine populations and living coral

reefs, are also home to several deep wrecks, such as the **Thunderbolt**, where students complete advanced and wreck diving skills. On recreational dive trips, as well as training sojourns, students act as divemasters and mates, assisting in docking and mooring procedures, assuring diver safety, giving dive briefings and actually guiding dives. Back at the resort's freshwater pool, several groups may be accommodated at once for class presentations and confined water practice. The resort not only provides a convenient cluster of facilities but also a comfortable, attractive waterfront environment.

About two and a half hours by car from Miami, Marathon's small local airport also serves connecting flights from other Florida cities. You won't necessarily need a car here but side trips to Key West and Key Largo provide a delicious taste of the Keys' natural beauty and eccentric character. Philosophically, Hall's aim is to keep unproductive stress at a minimum. In keeping with this goal, a structured 40 hour training week allows students ample down time for relaxation and flexibility for tutoring or additional practice after hours. The program is not rushed and it is thorough. For NAUI students, there is no final examination or evaluation by an outside group. Students are evaluated at each and every level of their training, so those completing the full program are immediately certified and ready to go to work right away.

Bob Brayman's Career Institute at Hall's offers starting dates throughout the year, accommodating students at every level of training. In addition to the ten week program, there's a six week residency course for those eschewing store and resort training. Hall's also offers an honor course for those with time and money constraints. This approach requires the student to be self-motivated and possess good math and reading skills. Following 60 days of home prep, the course may be completed in residence at the institute in just ten days.

The practical concern of financing is simplified with the institute's wide spectrum of resources. In addition to cash and major credit cards, an applicant's options include veteran's benefits, government grants and financing and credit programs through the institute. With funding taken care of, all that's left is a phone call to secure your space for the next training date. Everything you need is waiting for you at Hall's—including the experience. With or without prior training, you may begin your dive career education today. For more information, call (800) 331-4255, in Florida (305) 743-5929, fax (305) 743-8168 or write to Bob Brayman's International Diving Career Institute at Hall's, 1994 Overseas Highway, Marathon, FL 33050. 

SSI Scuba Skills Update Program

A Convenient Refresher Course You Can Do at Your Own Pace

BY TAMARA COLLINS

The most capable divers are those who are completely confident in their skills. You've seen them on the dive boat or beach. They assemble their gear in a matter of minutes, go through the pre-dive equipment check and plunge into the water with great aplomb. Their skills underwater are just as refined—they wear a minimum of weight, have excellent buoyancy control and skim over the ocean floor without churning up the sand or crushing the corals. They are the first ones off the dive boat and the last ones up, maximizing their bottom time with relaxed and normal breathing. Divers can only come to this level of skill through practice and experience. Unfortunately, some people don't have the opportunity to dive year-round and have lost the confidence and proficiency they had acquired upon completion of their open water course. If this is your predicament, spend an hour with the SSI Scuba Skills Update program before your next dive trip. It is a positive step toward calm confidence underwater and the most enjoyable dive experiences of your life.

Scuba Schools International's (SSI) dive programs run the gamut from Open Water Diver to Specialty Courses and Advanced, culminating in the Platinum Pro 5000. If you've gotten a little rusty and are looking forward to these milestones, SSI offers the Update program as a self-paced, home study tool to review the skills learned in the Open Water Diver course. With the combination of the Scuba Skills Update Video and Study Guide you can watch and learn at your own pace and test your knowledge a section at a time with the video as your reference and guide. After you have completed the home study course, you have the option of participating in a Scuba Skills Update presentation and open water session, which will qualify you for a validation sticker for your certification card and logbook.



SSI's Scuba Skills Update program provides an entertaining video and study guide as self-paced home study tools.

SCUBA SKILLS UPDATE VIDEO AND STUDY GUIDE

Your first step down the path of renewed confidence in your scuba skills is an entertaining, 18 minute viewing of the video. Sophisticated computer graphics

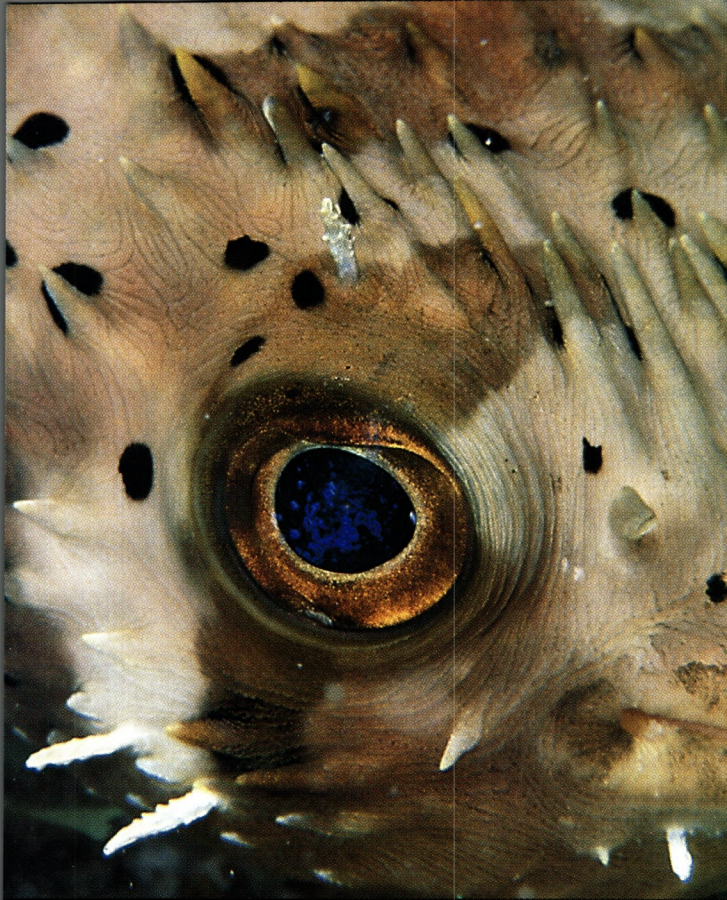
and beautiful footage shot in St. Lucia take the monotony out of learning. The soothing voice of the narrator guides you through each section: the Responsible Diver Code; Preparing Your Equipment; Planning Dives; Dive Tables Review; Diving Skills Review; Emergency Skills Review; Using Your Dive Log; and Continuing Education offered by SSI. The video was designed to be paused and re-wound for review of certain sections—you can watch it and test yourself a section at a time or watch it in its entirety and then answer the questions in the study guide.

The Scuba Skills Update Study Guide contains seven short quizzes that review your knowledge of the information in the video. After you have completed the questions, you can review the answers in the back of the booklet. The study guide also includes Update Tips, such

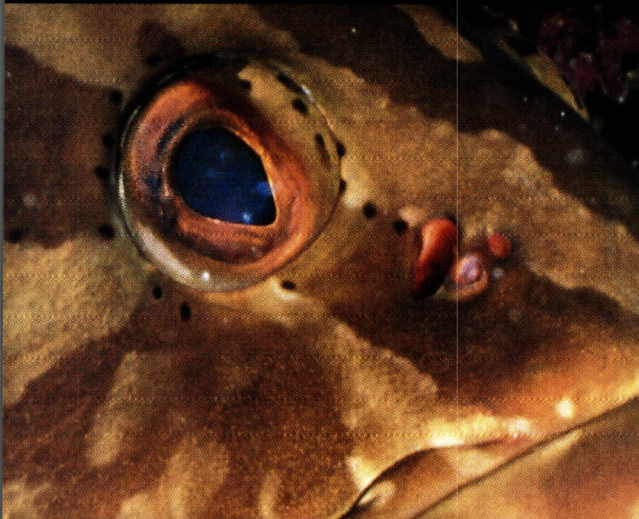
as the recommended depths for recreational divers and the importance of neutral buoyancy; a scuba equipment checklist; and a copy of the dive tables to be followed while answering the Dive Tables Review questions.

CONCLUSION

If you've lost that self-assured awareness you felt at the completion of your open water course, look for the Scuba Skills Update program at your local SSI retailer. In a matter of minutes and with some additional time underwater you can regain your confidence. The video and study guide package are sold through SSI dealers for between \$25 and \$29. For the address of a dealer in your area write to Scuba Schools International at 2619 Canton Court, Ft. Collins, CO 80525-5598 or call (970) 482-0883, fax (970) 482-6157. ➤



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Nikonos-V 20mm f/2.8 Lens

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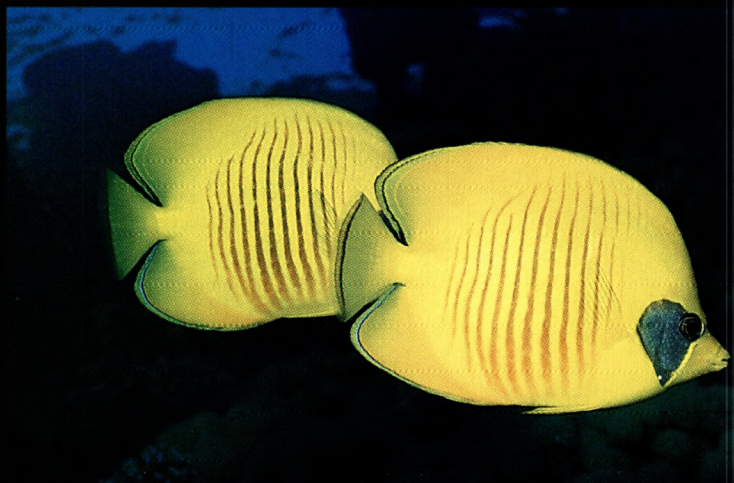
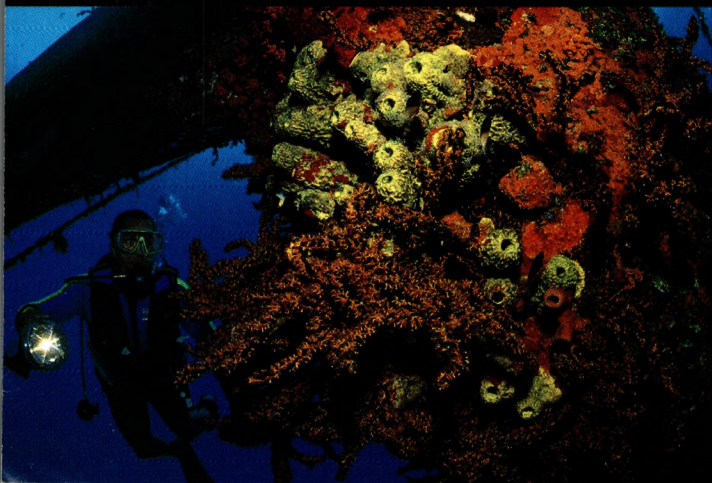


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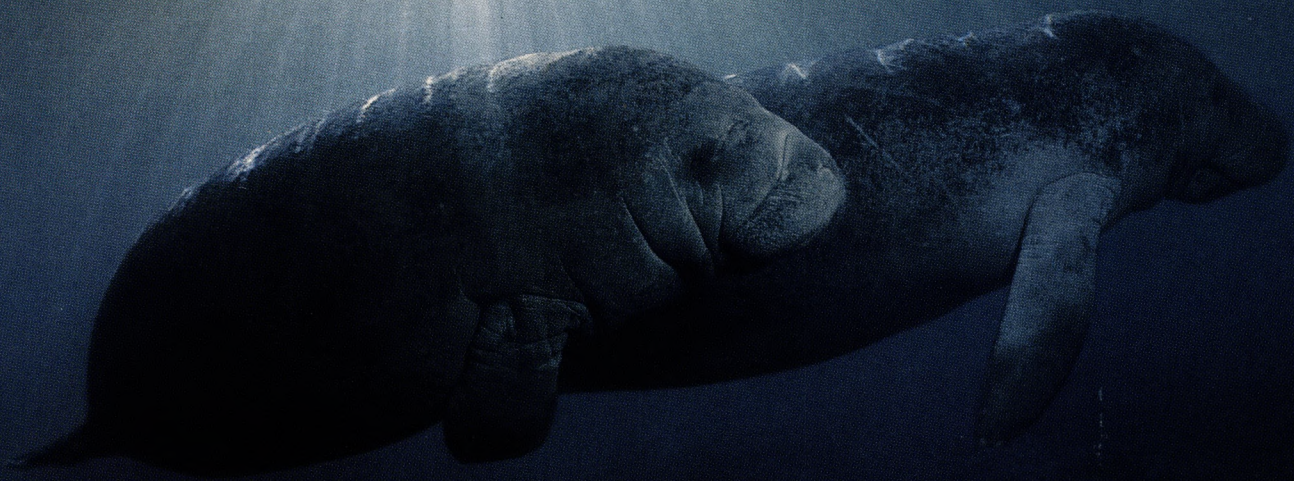
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What is the Question?

BY DENNIS K. GRAVER

This month's quiz is different than usual because it provides only the answers. Knowledgeable divers should be able to determine the questions.

1. This law states that for any gas at a constant temperature, the volume will vary inversely with the absolute pressure while the density will vary directly with the absolute pressure.
2. This is a reversible thermodynamic process that occurs without gain or loss of heat.
3. This law states that at a constant pressure, the volume of any gas will vary directly with the absolute temperature.
4. A fixed reference line on a compass.
5. A lung overexpansion injury characterized by air in the center of the chest.
6. Tides with the minimum range between high and low water.
7. A valve that controls pressure in such a way that the pressure does not affect the force required to open or close the valve.
8. Physical damage to the body caused directly by changes in pressure.
9. Poor visibility resulting from overpopulation of algae or plankton.
10. The deflection of winds and currents caused by the rotation of the Earth.
11. Pressure in a fluid is transmitted uniformly in all directions.
12. An abrupt transition from a colder layer to a warmer layer of water when the colder layer is shallower.
13. This law states that the amount of gas that will dissolve in a liquid is directly proportional to the partial pressure of the gas.
14. The direction and velocity of a current.
15. A pressure reduction step in a regulator or compressor.
16. A valve that operates against the direction of gas flow.
17. The local difference in degrees between true and magnetic north.
18. The distance between two successive wave crests or troughs.
19. A loss of orientation that results from pressure changes in the ear.
20. This law states that at a constant volume, the pressure of any gas will vary directly with the absolute temperature.
21. The estimation of position based on distance and direction.
22. A depth indicated by a dive computer, above which one should not ascend.
23. A type of fish poisoning caused by toxins in a fish that do not affect the fish.
24. The most important feature of a weightbelt.
25. This knot is used to form a temporary loop at the end of a line.

Scoring: 23-25 correct questions = Outstanding; 20-22 = Excellent; 18-19 = Good; 15-17 = Fair; 0-14 = Poor

Answers: (1) What is Boyle's Law? (2) What is an adiabatic system? (3) What is Charles' Law? (4) What is a lubberline? (5) What is mediastinal emphysema? (6) What are neap tides? (7) What is a balanced valve? (8) What is barotrauma? (9) What is a bloom? (10) What is the Coriolis effect? (11) What is Pascal's Principle? (12) What is a reverse thermocline? (13) What is Henry's Law? (14) What are set and drift? (15) What is a stage? (16) What is an upstream valve? (17) What is variation? (18) What is wave length? (19) What is altobaric vertigo? (20) What is Amont's Law? (21) What is dead reckoning? (22) What is a ceiling? (23) What is ciguatera? (24) What is a quick-release? (25) What is bowline?

NAUI International Conference

The 1996 NAUI International Conference on Underwater Education will be held in Genoa, Italy **November 7 to 9** at the world-famous Genoa Aquarium. The IQ theme for this year will be Marine Conservation Through Diver Education. There will be a post-conference dive trip to the Red Sea via Hurghada November 10 to 17. Attendance is free after a daily aquarium access fee of \$10; specific seminars may require an additional charge.

Special hotel accommodations will be at the Genoa Sheraton. To book a room, fax Grantour at (011) 396-5041375, attention: Miss Antonella; ref: NAUI IQ.

For more information, fax NAUI Service Italia at (011) 396-5943016; for general NAUI information, visit on the Internet at <http://www.naui.org/>.

Adventure! Expo '96

The New York International Adventure Travel Show—Adventure! Expo '96—will be held **November 8 to 11** at Madison Square Garden in New York City. In addition to scuba diving, attendees will be exposed to African safaris, whitewater rafting and kayaking, Amazon jungle adventures, space exploration, archaeology, eco-tourism, mountain biking and much more of the latest in exotic and extreme adventures. Prize drawings will be held and will include airfare and accommodations in the Amazon jungle for two and much more. Admission is \$10.

For information, call (212) 629-2093 or e-mail at sunexpoinc@aol.com.

YMCA Scuba Convention

The 1996 YMCA National Scuba Convention will be held **November 15 to 17** at the Huntsville Marriott and U.S. Space and Rocket Center in Huntsville, Alabama. This year's theme is Sharing Innerspace and the event is open to divers of all certifications. Mercury astronaut Scott Carpenter will be the keynote speaker at the banquet on November 16. Special sessions will feature an astronaut's view on diving and space, as well as how NASA technology has been applied to scuba diving. Optional sessions will include simulated astronaut training and diving in the underwater astronaut trainer at U.S. Space Camp.

For information, call (205) 859-3483 or visit on the Internet at <http://www.hsv.tis.net/~dai/ymcaconv.htm>.

International Underwater Medicine Symposium

The Federation Francaise d'Etudes et Sports sous-Marins, in association with the World Underwater Federation (CMAS), will hold an international symposium on breath hold diving **December 6 to 7** in Paris, France. The physiology, psychology, limits and techniques of breath hold diving, as related to professional and recreational activities, will be discussed.

For more information, contact Dr. Michel Leloup at 21 rue Voltaire, 93100 Montreuil, France or call 01 48 70 92 93; fax 01 48 70 71 90.

Wrecks & Treks '97

The Boston Diving Show will present the PDIC Celebrity Series Seminars, Wrecks and Treks '97, on **February 15, 1997**, at the Holiday Inn and Resort in Marlboro, Massachusetts. The show will feature Tom Mount of IANTD (International Association of Nitrox and Technical Divers), Richard Nordstrom of Divecomm, Inc., Don Whitehead and Fred Calhoun of PDIC. Tom Mount will be presented with the Paul Revere Spike Award of the Underwater Club of Boston, a richly mounted, authentic copper spike from the shipwreck *USF New Hampshire*. The show hours are 10:00 am to 4:00 pm.

Tickets will be \$10 at the door or may be purchased in advance by writing Fred Calhoun, Apple Ridge 2-6, Maynard, MA 01754. Make checks payable to "Underwater."

1997 CME Conference

Duke University School of Medicine of Durham, North Carolina, will join St. George's University School of Medicine of Grenada, West Indies, for a CME conference **February 7 to 11, 1997**. The conference will be held at St. George's new campus at True Blue. Among the several noted speakers will be Richard Moon, M.D., Medical Director of Divers Alert Network and F.G. Hall Hyperbaric Center. He will lead a panel on hyperbaric medicine. Other topics will include hypertension, infectious diseases and sleep disorders. CME credits will be granted through Duke University.

For information, contact the Office of Public Affairs at (516) 665-8500 or fax (516) 666-7609.

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SCUBA ACCESSORIES

SDM Editors Pick Items That Make Diving Safer, Easier and More Fun!

BY TAMARA COLLINS

PHOTOGRAPHY BY BONNIE J. CARDONE

**EDITORS'
PICK OF THE MONTH**

INNOVATIVE SCUBA

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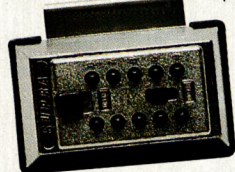
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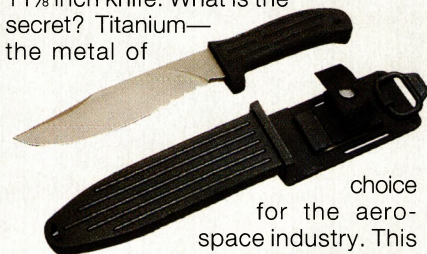
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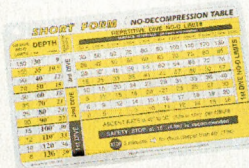


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How to Choose A Dive Destination

BY JEANNE BEAR SLEEPER

Whether you have two days or two weeks for a scuba adventure, the big question is "Where?"

How to decide where to go, so your precious play time and tight budget are put to the best use, is a challenge. Some divers find a place they like and keep returning to the same spot. This is boring but simple decision making. Others use stair step roulette—throw an issue of SKIN DIVER down the steps and go to the destination featured on the page the magazine opens to.

If you ask well traveled divers their favorite destination, there is usually a pause, followed by the question: "To do or see what?" There is no single perfect dive destination, it all depends upon an individual's wants, needs and budget. The following are several factors for you to consider.

THE SIX BIG QUESTIONS

1. Budget
2. Trip length (travel plus diving days)
3. Individual or group travel
4. Personal dive skill level
5. Dive activities or objectives
6. Shore based or live-aboard boat

Be honest with yourself on each of these points. Budget probably makes a lot of decisions. A car trip to local waters, camping and shore diving is about as economical as it gets and can be great fun. It is a very different experience from staying at a four star resort and diving the tropics. The more creature comforts and pampering you want, the more the price escalates.

Trip length affects how far you can travel and still have time to dive. A West Coast diver with one week's vacation will need two travel days minimum for a U.S. or Caribbean location, leaving four to five days for diving. The same diver going to Australia for a week would likely end up with three days of Great Barrier Reef diving—for most people that is too much travel time for the amount of diving!

Individual or group travel can be a hard decision. Most divers profess to being pretty independent but enjoy skipping all the paperwork, travel details and logistics. As a beginning traveler, group travel is an anxiety reducer. For a veteran traveler with a complex itinerary, solo may be best. Despite all the jokes about group travel,

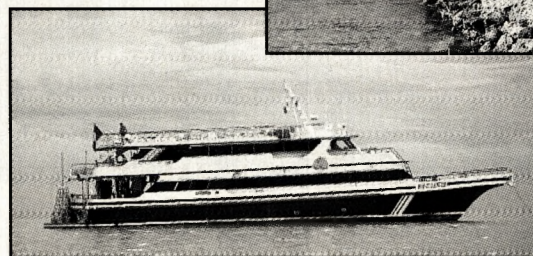
don't write it off. It can be a wonderful way to meet interesting people, leave the work to someone else and do special things you would not have been able to arrange on your own.

Personal dive skill level has a big im-



photos/Bonnie J. Cardone

A dive holiday can be anything from a camping trip (above) to a tropical resort (right) to a luxury live-aboard (below). Make your choice, then thoroughly research your intended destination to avoid any disappointment.



pact on what is best for you. Cocos Island is incredible for strong swimmers with excellent watermanship and no fear of large marine life. Cancun has clear, warm water and nearly constant currents. The Great Lakes are loaded with wrecks but the water is green and cold. Good or bad places? It depends upon your skill level and preference. A diving heaven for one person can be torture for another. Know before you go!

Dive activities or objectives will be a big factor in determining a good fit for your dive trip. Plan to spearfish? Ask before you book a boat, as many do not allow spearfishing. Want to see or not see

sharks? Ask. You will be surprised at how frequent or infrequent sharks are at popular dive locations.

Want to make three to five dives a day? Ask about the schedule before you book. I was recently at a remote, expensive Great

Barrier Reef island resort where diving was one of the few things to do. The normal program was one tank in the morning and one tank in the afternoon.

Shore based or live-aboard boat diving can be a big decision. Do you tend to get sea-

sick, have a nondiving spouse/guest, only want to make two dives a day or crave the nightclub scene? A live-aboard may not be the right choice. However, if you measure a great day by the number of dives, lack of traffic and noise, no telephones and early to bed, then a live-aboard may be perfect. Boat trip prices have a range just like restaurants and hotels, so shop for more than price when picking a live-aboard.

THE 40 LITTLE QUESTIONS

Now that you have done some soul and pocketbook searching with the six big questions, here are the little questions to round out your decision making process. The answers will help you select a resort, hotel, live-aboard or dive operator once you have chosen the destination. There are no right or wrong answers, just personal preferences.

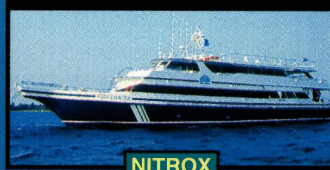
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Wave Dancer - Belize



NITROX

Wind Dancer - Bay Islands

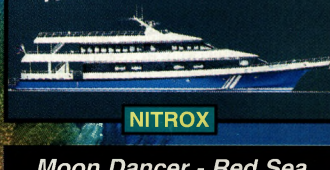


Sea Dancer - Turks & Caicos



Sun Dancer II - Palau

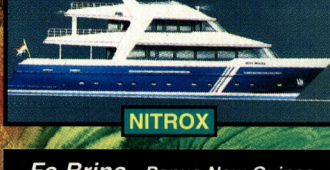
New



NITROX

Moon Dancer - Red Sea

New



NITROX

Fe Brina - Papua New Guinea

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ADVANCED DIVING

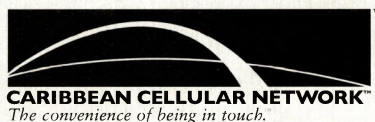
1. Do you want to pay one fee and have everything included or pay as you go?
2. Is this a romantic getaway at the resort of your dreams or is the hotel simply a place to sleep between parties and diving?
3. Do you expect to be pampered and waited on or just to have clean, comfortable accommodations?
4. Is dinner something you do before a night dive or is the dining experience the evening's entertainment?
5. Do you want to carry dive gear back and forth or leave it to the deckhands?
6. Do you get bored easily or can you dive similar terrain for days and always see something new?
7. Does it take you the first two vacation days to unwind from work and traveling and do you get itchy the last day before traveling home? Hint—you better take more than a week vacation.
8. Can you put work, home and kids on automatic for the length of time needed for a certain trip?
9. Is your wallet as deep as your dreams? Can you make the trip without worrying about the cost? Do you have champagne tastes and a beer budget?
10. Do you want to try a new place or

repeat a past experience?

11. Ever thought about learning a new underwater skill, such as photography? What about coaching from a pro?
12. Do people need to speak English for you to be comfortable?
13. How tolerant are you of schedule changes, variable weather or mechanical problems? The more intolerant you are, the more research you need to do and the less likely you should travel during certain seasons or use budget service providers.
14. Do you have a current passport? DAN card? Certification card?
15. How many dives a day do you want?
16. How long a boat ride to the dive site is preferred?
17. Do you want to do shore diving, either as a guided group member or on your own?
18. Can you use the resort's equipment to dive on your own?
19. Is night diving important to you? Is it common at this destination? Can dive lights be rented?
20. How many divers can you expect on the boat?
21. Are all levels of divers mixed on the same boat and diving the same site?
22. Physically, how big are dive sites? Is it crowded underwater with everyone

looking at the same pinnacle?

23. Is solo diving permitted? Or will the boat pair you with another solo diver and expect you to buddy dive with a stranger?
24. Are there divemasters available who will buddy dive with you if you wish?
25. Are guided dives follow the leader style or does a guide hover above the group in the water and let you go where you choose?
26. Is independent buddy pair diving permitted?
27. Is computer aided multi-level diving permitted? Is there a chamber nearby?
28. Is a time limit set by which you must be back at the boat regardless of your air supply or dive profile?
29. What activities are prohibited?
30. How is dive gear handled? Who carries it? Where is it stored?
31. How long does the boat wait for latecomers?
32. If you are going to a resort with a name personality, will that person be there when you are?
33. If you are going on a name personality tour, will that person (or someone from his/her company) be on the trip and what does he or she do? Dive with you? Eat with the group? Lecture? Critique photographs?
34. If food is included, how easy are you to please? Quality? Quantity? Likes



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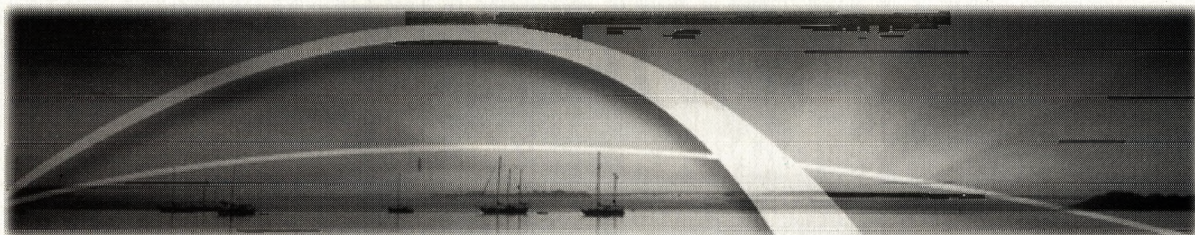
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and dislikes? Allergies? Fat free? Kosher? Is the kitchen/galley willing or able to meet your needs?

35. Is there back-up gear available for use/rent if your personal gear fails or is lost? What if you do not bring all of your own gear?

36. What is the ratio of staff to divers?

37. If you are a single, is there a surcharge or single supplement cost? Will the boat put another single in your cabin without your permission? With your permission?

38. What is the resort's or boat's history for mechanical failures? Do divers comment about the air-conditioning regularly failing?

39. What have you read or heard about the specific boat or resort from other divers? Would they go back? Is it a good value for the money?

40. How much investigation are you willing to do before booking a trip to ensure you get what you want and what you paid for?

SUMMARY

There are thousands of well run resorts, dive shops and live-aboard boats around the world. The challenge is to match the destination, operator, diving opportunities and price to the diver. A perfect match is diving bliss, a mismatch

can be the trip from hell.

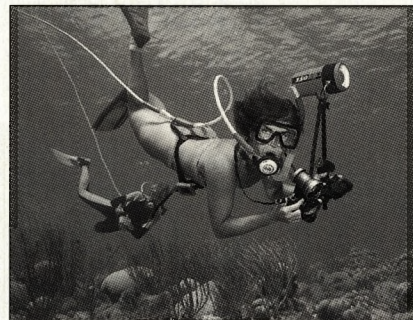
Diving tour operators usually have a standard of practice, schedule, equipment and staff that changes little from week to week. Travelers arrive with expectations from advertising, other divers' stories, past experiences and their dreams and expect the destination to deliver. The closer the reality and the dream come to matching, the more satisfying the trip.

The trick is for diving travelers to honestly assess their wants and to select the dive destination and operator who delivers that product. Travel agents, group tour leaders and published stories are good places to start your research. The last step is to pick up the telephone or send a fax and ask the detailed or tough questions that will allow you to make an informed decision. 🐟

Dive Notes

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For more information write to Brownie's Third Lung, 940 NW First Street, Ft. Lauderdale, FL 33311 or call (954) 462-5570, fax (954) 462-6115. 🐟

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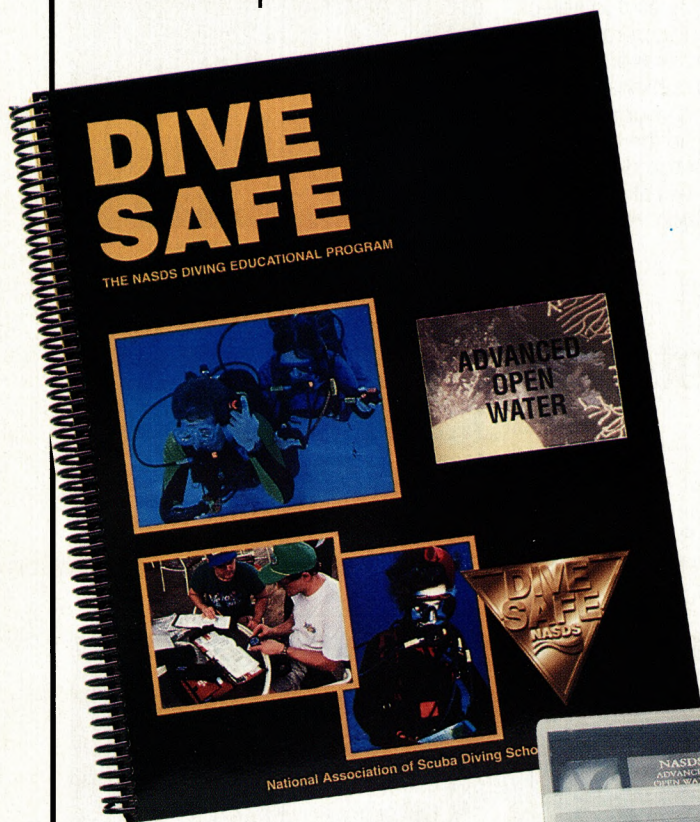


NASDS Advanced Diving Course

Develop Your Full Potential Using the Positive Approach

BY TY SAWYER

PHOTOS BY BONNIE J. CARDONE



The best divers are constantly improving their old skills and developing new ones. As with any activity it takes practice, practice and more practice to become proficient. In diving, proficiency and safety equal comfort and fun. But, a person can only go so far on his/her own, so it helps to have an inspired mentor to take you to the next level. If you are contemplating training beyond your basic open water certification, you would do well to look into the NASDS—National Association of Scuba Diving Schools—Advanced Open Water Diver training course. By combining a positive and innovative approach with exceptional videos, a thorough manual and practical exercises, NASDS has taken advanced open water training to a new level. As a result, NASDS has situated itself on the leading edge of dive training.

TOTAL DIVING SYSTEM: NASDS believes in adapting to the open water rather than attacking it. This idea begins with proper equipment and skills conditioning, develops with understanding

and knowledge and ends with intelligent and comfortable application. This is the Total Diving System. With each step of the way mapped out plainly and sensibly by NASDS, the process toward safer dive skills is natural and nearly effortless. The system works because NASDS has developed its course for upper end divers, those who are active in the sport and have a strong desire to improve, to challenge themselves and expand their abilities. NASDS doesn't necessarily want to be the biggest certification agency, just the best. And this begins with motivated divers.

THE BEST DIVER SYNDROME: Because NASDS takes divers' safety seriously, it has set up its training for the motivated and prepared diver—the Best Diver Syndrome—a combination of skills, preparation, an intimate knowledge of one's equipment and good physical conditioning. To ensure you are on the right path and are ready for the NASDS Advanced Diver Course, the manual includes a self exam entitled Safe Diver Profile, which evaluates your readiness from an equipment, skills and physical standpoint. Top marks on this exam indicate you are ready for the next level of training.

THE COURSE: Instead of emphasizing what could go wrong, what not to do and the worst case scenario, NASDS utilizes a positive approach by teaching divers how it feels and what it is to dive safely and properly. To accomplish this both an instructional manual and supplementary videos are used.

INSTRUCTIONAL MANUAL: The 8 by 11 inch, spiral bound, 157 page manual is extensively illustrated and has a highly readable, thorough text. There are four chapters: Advanced Dive Planning; Deep Sport Diving; Night Diving; and Underwater Navigation. Each chapter begins with an outline entitled: Purpose of this Chapter. In a gray box at the beginning of each section, there are questions or statements the reader should keep in mind while reading each chapter. Additionally, in a column beside the text, there are highlights that condense the written material into easily remembered references and reminders. Each section ends with a summary and knowledge review to aid in retention of the course material.

THREE VIDEO MODULES: To assist the learning and comprehension of the advanced diver material, each element of the NASDS Advanced Open Water Training program is supplemented by one of three informative videos. Video 1 covers ad-

(Continued on Page 54)



The NASDS Advanced Open Water Diving Course educational materials include a well written, richly illustrated manual (top), three supplementary videos (above) and the advantage of an innovative, positive approach to safer diving.

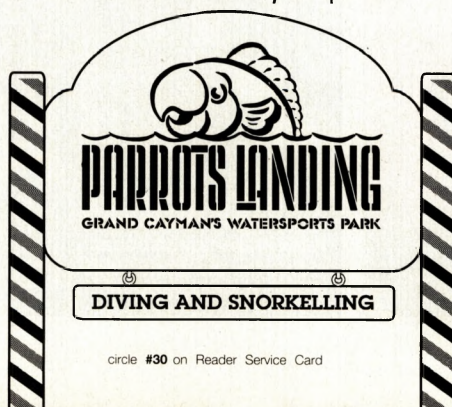
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Peter Hughes ... GOES

What's New From Diving's #1 Innovator



TEXT AND PHOTOGRAPHY BY STEPHEN FRINK

Peter Hughes has a long history of creative innovation in dive operations. In fact, many of the standard convenience factors we now enjoy at dive centers around the world evolved from his compulsion to make life easier for his clients. Niceties such as guest gear storage with complimentary mesh bags, sign-up boards to indicate divers' preferences among a menu of available dive sites, dockside airfill stations and a full service underwater photo center, complete with resident pro, were all introduced at Dive Bonaire, Peter Hughes' land based dive operation at the Divi Flamingo Beach Resort. But, in the past few years, especially since he resigned from his executive position with the Divi Hotels (he still works closely with Divi as a consultant), Peter has become known for his international fleet of live-aboard dive boats. Innovation and quality have been part of the Dancer Fleet formula since the beginning.

Peter's involvement with live-aboard dive operations began in January of 1991 with the acquisition of the *Sea Dancer*. Operating in the Turks and Caicos, the *Sea Dancer* is a 110 foot alu-

minum former crew boat, fully air-conditioned and completely renovated with diver conveniences such as air compressors, watermakers, sophisticated dive deck and E-6 film lab. While operating a single live-aboard would have been

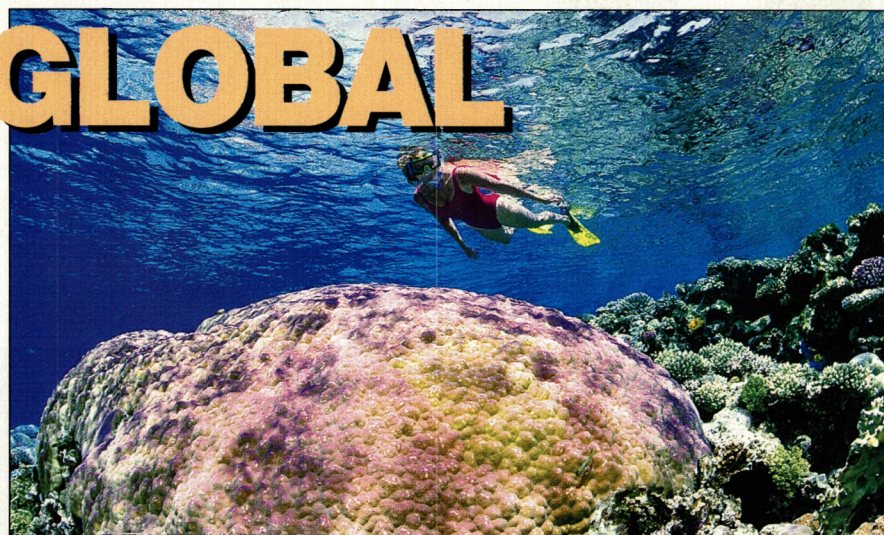


Above: Peter and Alice Hughes are the innovators of the Dancer Fleet dynasty. Left: Clownfish and their host anemone on a wall in Palau.

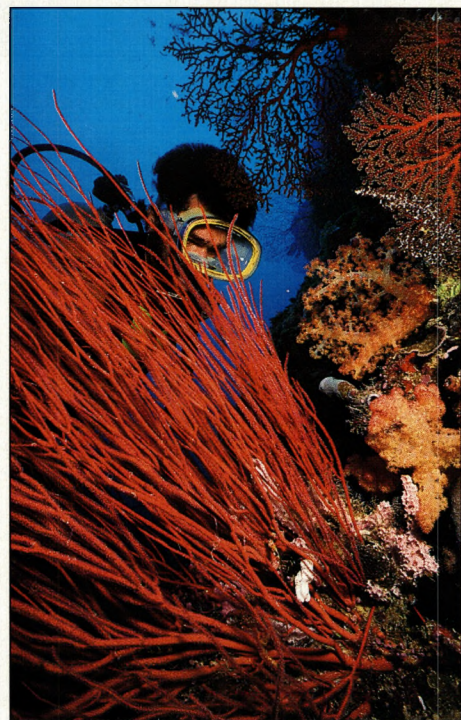


Guests of the *Sun Dancer* relax and enjoy an ocean view from the picture window in their stateroom.

GLOBAL



Above: A snorkeler leaves the *Moon Dancer* (below right) to explore a shallow coral garden in the Red Sea. Below left: Palau's colorful hard and soft corals captivate Peter Hughes—diving from the *Sun Dancer II* (bottom right). Middle right: The *FeBrina* cruises Papua New Guinea.



a full plate for most entrepreneurs, Peter knew there was a world of excellent diving out there and he wanted to offer live-aboards where divers wanted to go.

By February of 1992, his second live-aboard was launched in the Caribbean dive paradise of Belize. These are fertile waters for a live-aboard because the best diving is along the atolls well offshore and difficult to reach from land resorts. When the *Wave Dancer* came to Belize, the state of the art in live-aboard diving was accelerated. Peter built this boat with viewing windows instead of small portholes (or no windows at all, which was typical of many live-aboards at the time). There were heads and showers in every cabin and the interior

was decorated more like a fine yacht than a dive boat.

For years there was some industry expectation that divers would accept substandard creature comforts topside, as long as the diving was good. Peter decided to only deploy his vessels where the diving was superior as well as creating a platform of significant luxury.

The *Sun Dancer* was introduced to the dive industry at the 1994 DEMA show in New Orleans and, as journalists, dive wholesalers and dive shop owners took their first look at the opulent furnishings and pristine decks (the tasteful decor was thanks to Alice Hughes), it was clear a new era in live-aboard service had arrived. Not only were the diving and underwater photo accouterments in place, the things for which Peter Hughes was most famous, but now there were bathtubs in some cabins, terrycloth robes in the closets and candy on the pillows at night. Small things, perhaps, but they seemed to shout that divers were no longer second class, at least as far as the Dancer Fleet was concerned.

The *Sun Dancer* began operations in Palau in April of 1994. Cruising among the gorgeous Rock Islands enroute to such icons of exotic diving as **Blue Corner**, **Ulong Channel** and **Peleliu Wall**, the navy blue hull and three diagonal bow stripes soon came to symbolize the epitome of live-aboard excellence. Loyal repeat customers began to wonder what could be next for Peter Hughes and the Dancer Fleet.

Their question was answered in May of 1995, when the 120 foot *Wind Dancer* began operations in the Bay Islands of Honduras. The fleet was now at four boats but, not only was expansion occurring in the live-aboard realm, Peter's successful land based dive operation at the Princess Beach Resort was growing as well. The Princess Divers fleet had grown to three vessels (including the *Curacao Princess* and the *Cat Dancer*) with the addition of the *Curacao Duchess*, a Michael Fitz 41 foot custom dive boat; enriched air technology was added with the availability of nitrox fills and IANTD nitrox certifications. As if all of the above were not enough, the Dancer Fleet continues to expand.

NEW FOR 1996 AND BEYOND: Peter and I went diving together last August in Papua New Guinea aboard the *MV FeBrina*. I had chartered the boat for a photo tour and called Peter, thinking it might be fun for him to go on someone else's boat for a change. Well, he got hooked on the quality of the diving. In his words it was "the best diving experience of my life." He quickly decided to share the underwater world of Papua New Guinea with his clientele. As a result,

(Continued on Page 65)

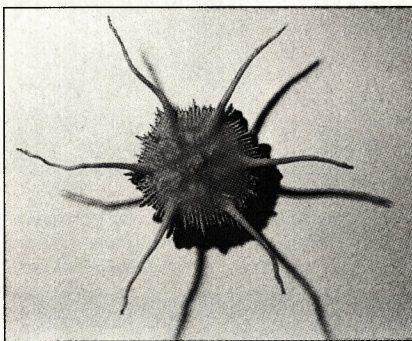
Black Light and Marine Life

TEXT AND PHOTOGRAPHY BY E.R. CROSS

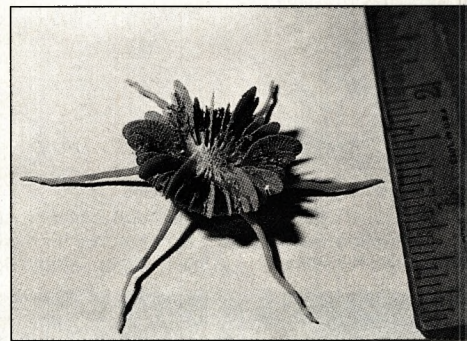


Many divers take their first underwater photograph and have that glorious feeling of having just been the first person to capture an image underwater. This has been going on since Louis Bouton took the first underwater photo in 1898, nearly 100 years ago. An even earlier article titled, "Memoire sur la Photographie sous-marine," appeared in *Archives Zoologiques, Experiences Generales*, Vol. 21, in 1893. Louis Bouton was also involved in this earlier underwater photographic effort.

The cameras of most modern divers are simply extensions of their normal vision. Both photographers and their cameras focus on objects that are large or brightly



Above and above left: This unidentified coral colony was dredged from deep water in the Philippines. Under ultraviolet light its drab gray becomes a brilliant red.



colored or things that move. Most photographs obtained are straightforward renditions of everyday things as seen by all divers. Possibly 90 percent or more of all marine life forms have never been seen by

most divers and fewer than that have been photographed and studied.

In the early 1960s, I grew tired of photographing fish doing the same things,
(Continued on Page 54)



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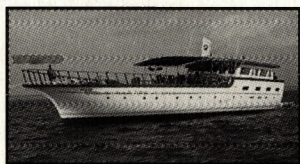
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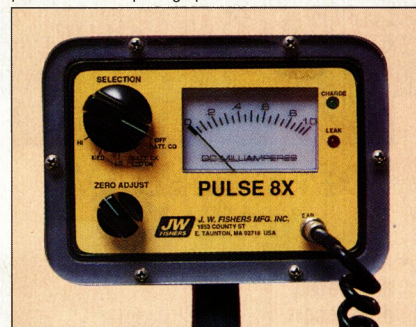
Maximum Sensitivity, Rugged Design

BY JIM WALKER



J.W. Fishers' Pulse 8X hand held metal detector has one function: to find metal—all metal—as fast as possible; whether deeply buried in the sediment, on land, in shallow water or underwater to depths of 200 feet. This translates into two words, maximum sensitivity, and the Pulse 8X offers just that. Of course, its simple, rugged design and easy operation

nylon webbing belt provided. The Pulse 8X comes with a waterproof earphone that you place under your wetsuit hood or mask strap when diving. High quality headphones are also provided for top-photos/PPC staff photographer Jim Brown



The Pulse 8X control panel was designed for easy operation with only a control knob, zero adjust and two LEDs.

shouldn't be overlooked.

While some metal detectors focus on discrimination, allowing the user to screen out some types of metal, there is a tradeoff in reduced sensitivity and detection depth. Some desired objects might be passed over. The Pulse 8X takes the opposite outlook, finding the most targets possible and letting your experience (with resulting tones and meter readings) make the discrimination. Despite its sensitivity, the 8X is unaffected by salt or fresh water or minerals in the sediment.

The Pulse 8X is built to handle the great outdoors. Made of rugged urethane, stainless steel and other corrosion proof materials, it can be set up with a short shaft for underwater use (as shown here), measuring 31 inches overall and weighing only six pounds total. This setup has a slight negative buoyancy underwater. For topside use, the 8X can be set up with a longer aluminum arm and extensions for a maximum length of 51 inches. In either configuration, the control box can be attached to the arm or removed and carried on the

side use. These have individual volume controls for each ear.

The 7.5 inch diameter searchcoil creates a bowl-shaped detection pattern that penetrates the soil well. Maximum detection depth will vary according to the size and composition of the target, from about five inches for a small ring to six feet or more for huge metal objects. Targets are indicated by a clear tone in the earphone or headset, as well as a reading on the meter. The strength of the tone and meter reading will vary according to the target depth, size and type of metal.

There are only two controls on the Pulse 8X. The selection knob has five settings: off; battery check; low; medium; and high. On battery check, the meter functions as a voltmeter to indicate the battery charge. The three other settings adjust sensitivity. For example, you might use the high sensitivity setting to quickly find a small target's general location, then switch to medium or low to pinpoint

(Continued on Page 27)

213

Ways to Get the Shot



For the Professional...

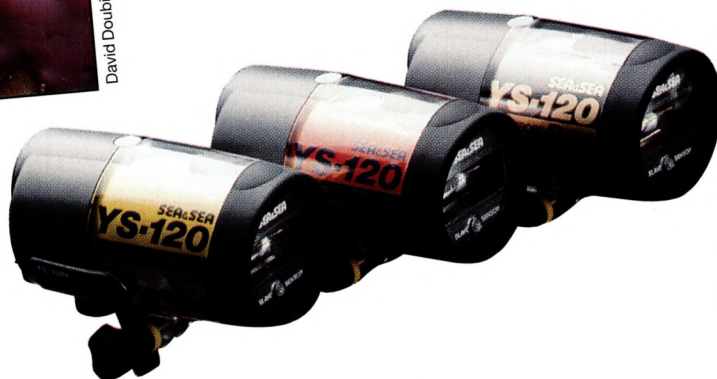


"I have been using Sea & Sea strobes since 1981. They produce beautiful light and they stand up to the destructive power of the sea."

David Doubilet
Photographer

YS-120 Duo Strobe

Light years ahead of its time, the YS-120 Duo is the world's only electronic strobe with internal circuitry that automatically adapts for TTL with the Motor Marine II-EX, SX-1000, Nikonos® V, RS and housed N50 or N90 cameras. Flash readiness and TTL confirmation indicators are built into both sides of the strobe head.



YS-300 Strobe

A premier high-powered flash with a wide 100° beam, it operates in three manual power modes and is TTL compatible with the Motor Marine II-EX, SX-1000, Nikonos V, RS and housed N50 and N90 cameras. Incorporates acoustic and neon ready light and TTL confirmation signals, a slave mode and a separately-powered target light.



15mm Lens

Compact and lightweight, the 15mm F3.5 was developed specifically for Nikonos cameras. Provides a panoramic 96° of coverage and exceptional depth of field. Lets you focus down to 10" and retain impressive image clarity and color saturation.



12mm F3.5 Fisheye

A world-class lens in a class by itself, this is the first and only primary fisheye exclusively for the Nikonos V. Covers an ultra-wide 167° and yields a flat, rectilinear image just 5 inches from the film plane.

20mm Lens

The practical choice for photographers who want versatility and affordability. Offers an 80° field of view, a focusing range from 1.3 feet to infinity, crisp definition at every f-stop.



Compatible with
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Fisheye Viewfinder



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...and Anyone Who Wants to Shoot Like One

Compatible ports available to accommodate a wide range of Nikkor AF & D lenses.



NX-90 Pro Housing

Exclusively for Nikon's N90 cameras, the NX-90 Pro has been exquisitely molded to encase the camera like a glove. Ergonomically designed external controls assure precision command of all manual and automatic camera functions. Features illuminated LCD panel and full-frame viewfinder. The ultimate instrument for the professional underwater photographer.

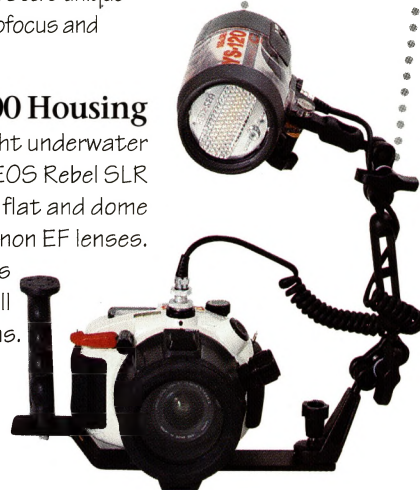
NX-50 Housing

Engineered for the Nikon N50 SLR camera, the NX-50 sports space age looks with down-to-earth features: easy-access mode buttons, oversized shutter release lever, large LCD window and one-step camera installation into Sea & Sea's unique built-in Quick Shoe. External lever allows you to choose between autofocus and manual focus underwater.



CX-500 Housing

A compact and lightweight underwater housing for Canon's EOS Rebel SLR autofocus camera. With flat and dome ports to accommodate Canon EF lenses. Simple dial-style controls allow facile operation of all camera functions.



New for '96
YS-120C
and
Sea Arm V

SX-1000 System

The SX-1000 is the first fully-integrated SLR housed camera system designed specifically for underwater photography. The hydrodynamically designed housing features seven easy-to-access external controls. Two optical ports accommodate six Sea & Sea interchangeable APO lenses.



YS-300 strobe

The SX-1000 with dome port for 14mm and 24mm wide lenses



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MX-10 Camera with YS-40 Strobe

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Shown with 20mm Wide Conversion Lens and Sportsfinder



You can change lenses underwater. But don't try this with any other manufacturer's camera, because only Sea & Sea cameras can.

The Motor Marine II-EX Camera

The Motor Marine II-EX incorporates 35mm and close-up lenses, automatic film loading and advance, power driven rewind, an in-viewfinder LED, built-in flash, ISO film speed indexing. It is also the world's only popularly-priced amphibious camera to sync for TTL flash photography at four shutter speeds. It's so sophisticated, it's simple.

The Motor Marine II-EX pro system: dual strobes on Sea Arm Vs, High Eyepoint Optical Viewfinder, lens caddy with 1:2 macro and 20mm lenses

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Phone 619-929-1909 • Fax 619-929-0098

J.W. FISHERS' PULSE 8X

(Continued from Page 26)

it before digging.

The zero adjust knob allows you to set the threshold tone and base meter reading (readjust each time you change sensitivity) before a target is located.

There are two LEDs on the control panel. Should a leak occur in the control box the red LED will light. (It also lights during battery check.) The green LED will light during battery charging.

The Pulse 8X has a rechargeable battery pack that will power about ten hours of operation. Charging takes 12 to 14 hours and two setups are provided. For charging directly from a 12 volt battery, use the attachment with the red and black handled clamps. For charging from a 120 volt AC outlet, use the attachment with the converter box. Spare battery packs are available. You can change packs as necessary, so one can be charging while the other is in use.

The Pulse 8X package has a suggested retail price of \$1,245. This includes everything you need: both topside and underwater armrests and extensions; 7.5 inch searchcoil; underwater earphone; topside headphones; AC and DC charg-



Charging the Pulse 8X battery pack can be done via a 12 volt battery or 120 volt outlet. All attachments are included.

er setups; waistbelt; nylon accessory pouch; extra fittings; and rugged Cordura carry bag.

Options include other searchcoils and a waterproof control box fitting that allows you to swap coils, dual underwater headphones, extra battery packs and a 220 volt charger.

The Pulse 8X amphibious metal detector could make the difference between finding valuable treasure and passing over it. With all the extras included and a limited two year warranty, it's a treasure itself. For more information or the address of the J.W. Fishers dealer nearest you, contact J.W. Fishers, 1953 County Street, East Taunton, MA 02718; (800) 822-4744, (508) 822-7330 or fax (508) 880-8949.

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THE UNITED STATES *Virgin Islands*

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TEXT AND PHOTOGRAPHY
BY SHIRLEY VANDERBILT

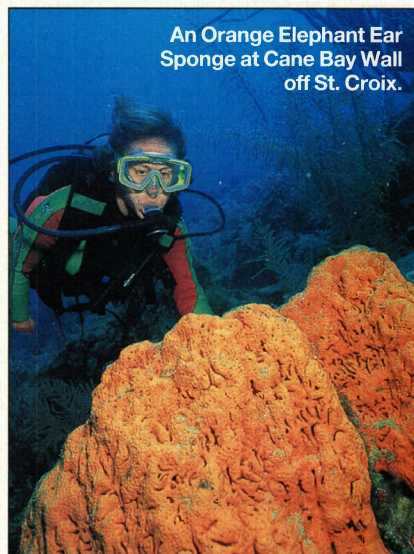
The islands of St. Croix, St. John and St. Thomas were born of the same mother ocean but have been shaped, through singularly unique histories and physical experiences, into vastly diverse personalities. The United States Virgin Islands rise from the multihued blues of the Caribbean Sea and Atlantic Ocean and serve as an enticing introduction to the string of more than 300 reef fringed isles and cays that so bedazzled the pre-Columbian Indians and early European explorers. The view here is every bit as breathtaking today as I imagine it was back then and these islands continue to hypnotize, beckon-



ing to adventurers and romantics. They never disappoint, glistening in simple beauty with mountains of deep green vegetation teeming with exotic flora and fauna and crescents of sandy beaches rimmed by crystalline turquoise waters and exotic coral reefs.

One of my favorite pastimes in the

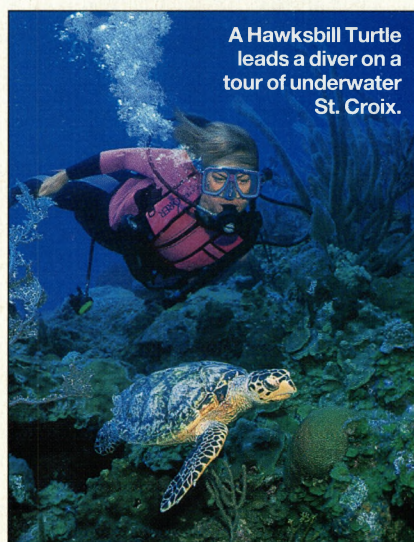
Trunk Bay is one of St. John's many exquisite beaches. Inset: Cruz Bay, St. John, is the main hub for ferries from St. Thomas and the British Virgin Islands.



An Orange Elephant Ear Sponge at Cane Bay Wall off St. Croix.



A porthole of the *Major General Rogers* presents a wreath of elaborate, colorful sponges and encrusting corals.



A Hawksbill Turtle leads a diver on a tour of underwater St. Croix.



On St. Thomas, Fort Christian reflects but a moment in the islands' history that includes Arawak Indians, pirates and a bloody reign of European colonizers.

USVI is the peaceful act of standing still and quiet along a high rise and taking in the view. It's a spiritual sort of activity, becoming one with the natural beauty of the islands—much like exploring the reefs, stopping to examine a delicate hibiscus blossom or sitting on a powdery beach digging one's toes into the sand. The USVI are full of these opportunities, along with the more hedonistic pursuits of nonstop shopping, gorging on luscious island treats and dancing until you drop at boisterous, local holiday celebrations. Of course, these latter activities may be found in many places throughout the Caribbean but there are few places where you'll find such a well established tourist infrastructure combined with some of the most incredibly preserved natural parks on earth.

The three islands, St. Croix, St. John and St. Thomas, share the trade winds of the Lesser Antilles, boasting warm winter temperatures averaging 77°F and

a summertime mean of 82. It naturally follows that water temperatures are quite comfortable as well, ranging from the mid 70s to low 80s.

About 1,100 miles southeast of Miami and 40 miles east of Puerto Rico, the islands sit slightly above 18 degrees north latitude. Rainfall is minimal and the trade winds blow continuously, keeping humidity low. Underwater visibility varies with the weather conditions, usually averaging 50 to 80 feet but sometimes exceeding 100 feet. With calmer seas from April through August, summer months generally provide better visibility. Winter, however, is blessed with the visit of migrating whales. Occasionally divers may hear their haunting songs underwater or catch a glimpse of breaching Humpbacks along the horizon.

So here you have the makings of a perfect tropical vacation spot. But, it gets better! Because the USVI are a part of the United States, you can forego the

usual challenge of foreign language, currency, electrical conversions and postage. There are some additional perks. No sales tax and an allowance of \$1,200 per person (families can pool their exemptions) worth of duty free shopping mean you can get great deals on major purchases such as jewelry, perfumes, watches, china, electronics and leather goods. You may also send up to \$100 worth of gifts home each day. U.S. citizens over age 21 are allowed to take home five bottles of duty free liquor (six if one is locally produced).

Traveling to the USVI is simple. Many major American airlines offer daily jet flights to St. Thomas and St. Croix. You don't have to carry your passport (proof of ID will do) but it's a good idea to bring it along just in case you decide to make a side trip to the British Virgin Islands.

Many dive shops offer day trips to the *Rhone* or snorkeling at the granite boulders of The Baths on Virgin Gorda. These trips require a passport to clear customs, plus an entry tax.

Transportation around the islands is accomplished via taxi or rental car services. You'll probably find a four wheel drive most helpful if you've planned self-conducted island tours. The only way in and out of St. John is by ferry, which is offered through an extensive daily schedule from downtown Charlotte Amalie in St. Thomas, as well as that island's western departure point of Red Hook. Ferries also connect these islands to destinations in the BVI. You'll find schedules posted in the free island guides but be aware that schedules may change and it's best to check with the ferry company or your travel agent before making plans.

St. Croix: Measuring 28 miles long by 7 miles wide, St. Croix's topography ranges from the mountain's subtropical rain forests to the arid scrub and cactus of the east beaches. The island's two main settlements are Christiansted, along a natural northshore harbor, and Frederiksted, a western seaport.

Christiansted's cluster of waterfront buildings, including a fort and customs house, are now national historic sites. The duty free shopping arcades feature colonnaded archways and open air balconies, some draped in blooming tropical vines.

Frederiksted suffered a loss of some of its heritage through fire and storms but was rebuilt with quaint, Victorian style gingerbread structures among the

THE UNITED STATES Virgin Islands

surviving Danish masonry work.

St. Croix's charm lies in the preservation of her West Indian heritage while providing a variety of accommodations, all with modern amenities and conveniences. Choices range from historic waterfront hotels to more remote, quiet resorts along unpopulated beaches. The better properties offer a full range of services. Many dive shops are housed within a hotel or are adjacent to several accommodations.

For between diving action, there's horseback riding or hiking in the rain forest, deep sea fishing, sailing, biking, tennis, golf and more.

ST. CROIX UNDERWATER: Much of the island's best diving is found along the north side, especially in the areas of Cane

Bay, Davis Bay and Salt River (actually a bay). Here the waters are rimmed by a 13,000 foot deep subsea canyon as well as the bountiful waters of the Caribbean Sea. A project known as Anchors Away has ensured the placement of permanent moorings at more than 30 dive sites along these shores, thus protecting the reefs and providing easy access.

My first wall dive near Cane Bay was **Jimmy's Surprise**. In contrast to the slight or negligible current of most sites, the waters surrounding the pinnacles of Jimmy's Surprise are frequently brisk. Bright sponges and corals of crayon red, orange, purple and yellow, as well as large, elegant gorgonians, envelop the pinnacle, which drops from 45 to 90 feet.



ST. CROIX DIVE OPERATORS

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(809) 778-1522

Blue Dimension Dive Center

(809) 773-8634

Cane Bay Dive Shop

(800) 338-3843
(809) 773-9913

Carambola Beach Resort

(800) 223-3000
(809) 778-3800

Cruzan Divers

(800) 352-0107
(809) 772-3701

Dive Experience

(800) 235-9047
(809) 773-3307

Dive St. Croix

(800) 523-DIVE
(809) 773-2628

Green Cay Divers

(809) 692-9405

Hotel Caravelle

(800) 524-0410
(809) 773-0687

King Christian Hotel

(800) 524-2012
(809) 773-2285

The Buccaneer

(800) 255-3881
(809) 773-2100

VI Divers

(800) 544-5911
(809) 773-6045

Waves at Cane Bay

(800) 545-0603
(809) 778-1805

Should the current here be too challenging for comfort and safety, a good alternative might be nearby

Rustop Twist. A high profile formation from 50 to 100 feet, this site is known for its visiting Spotted Eagle Rays. To the west, the wall becomes more vertical, with healthy garden patches in the shallows and a plunge to 600 feet or more. **Northstar Wall** features a drop-off from 40 to 60 feet leading to a sand plateau. Here an ancient Danish anchor lies embedded in the coral.

The walls of **Salt River Canyon** are equally dramatic but frequently experience a drop in visibility. Nonetheless, the vertical drop of **Salt River West** is awesome, with prolific tube sponges, gorgonians and large table corals. In early spring, the nutrient rich waters bring in Manta Rays and dolphins are sometimes spotted nearby. **Salt River East** generally has better visibility and more schooling fish.

Little Cozumel, so named because of its occasional strong currents, features an interesting undercut ledge at 60 to 70 feet encrusted with sponges and corals and accented by large gorgonians. Dive operators have been busy catering to the gastronomic desires of local groupers and moray eels. At **The Barge**, sometimes referred to as **Chez Barge**, it's a fish eat fish world. The feedings provide great action as the marine life, including a large

Green Moray Eel and resident Barracuda, comes in close for a bite. The 60 to 70 foot site is nice for a one tank afternoon dive. To the east of Christiansted, marginal visibility prevails but sites here, such as **Scotch Bank**, are a natural draw for feeding Manta Rays and Eagle Rays.

A short boat ride from Christiansted takes you to **Buck Island National Monument**. Not only is there a well marked trail for snorkelers but the beaches along the island's western shore are a pure delight for beachcombing and swimming. There's a special area set aside for divers but, to control impact on the reefs, access to diving Buck Island is limited to a specific Christiansted dive operator.

St. Croix's western shore features dive

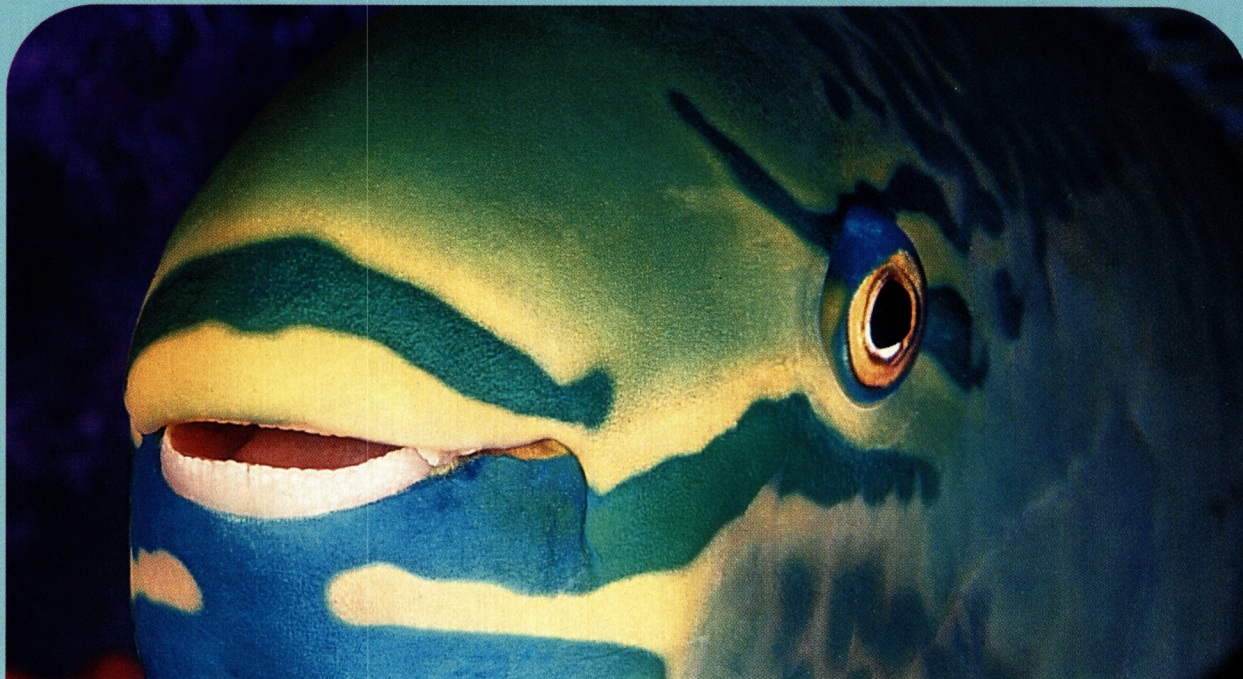
The United States Virgin Islands

sites around Butler Bay and Frederiksted. Several wrecks in this area deserve

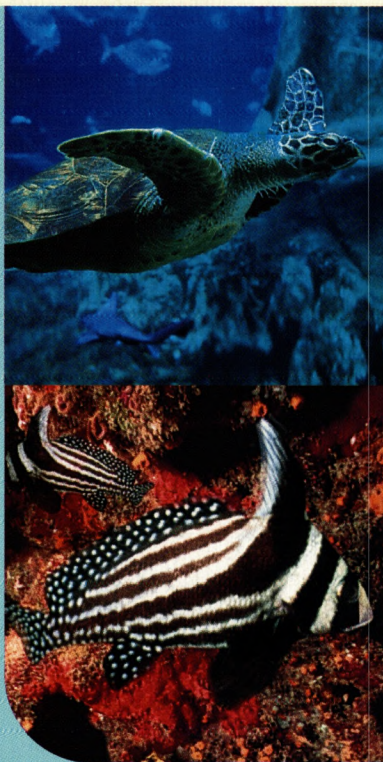
mention: the **Rosomaira** at 110 feet and the **Northwind** at 50 feet have both been down since the mid '80s. Nearby, the **Suffolk Maid** regularly attracts large schools of Horse-eye Jacks at her 60 foot depth. The old **Frederiksted Pier** was replaced by a new pier but every effort was made to preserve some of the old growth which has, for many years, played host to wonderful macro life. The pier is best visited at night, when the more exotic residents are likely to be out.

ST. THOMAS: This is undoubtedly the best known island of the USVI, attracting large numbers of tourists to the bustling seaport of Charlotte Amalie, the capital of the islands. Just outside town the full splendor of St. Thomas begins to unfold, highlighted by historic sites and magnificent scenic views from the island's high elevations. The island's dramatic topography creates several convenient observation points overlooking magnificent harbors, sand lined bays and the surrounding Virgin Islands.

Charlotte Amalie is where you'll find the bulk of the island's architectural treasures dotting the hillsides leading to the harbor. More than half of the buildings are more than a century old, combining West Indian and European architecture along the Dane's systematic grid outline.



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To find out how close and easy a great dive vacation can be, call your travel agent or 1-800-372-U.S.V.I.; or contact <http://www.usvi.net/> for Internet access.

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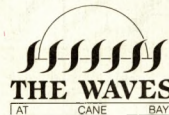
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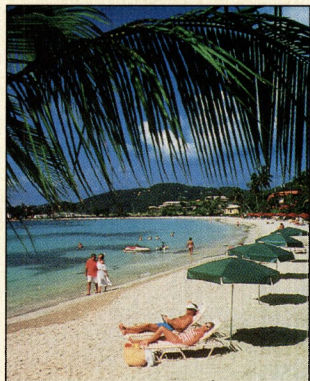


Photo by Joanna Paroski

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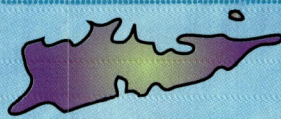
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THE UNITED STATES Virgin Islands

Accommodations in St. Thomas range from exclusive resorts to reasonably priced hotels and condos. From the famous Hotel 1829, an historic inn on Government Hill, to private homes along the beachfront, luxury is easy to find. And, for the budget minded, local dive operators offer package rates in conjunction with a variety of hotels. You'll also find quite a few all-inclusive resorts with the option of oceanfront units. Watersports abound along the beaches—windsurfing, sailing and snorkeling in addition to diving. St. Thomas is chock full of gourmet dining in casual settings, exciting nightlife and enriching cultural events. The island's comprehensive tourist infrastructure also includes the USVI's hyperbaric chamber.

ST. JOHN: On this island, it's back to nature, with nearly two-thirds of the island preserved as a national park. Of course, there are modern conveniences here. The hotels and guesthouses are completely up to date and some quite luxurious. Between the resorts and homes, however, are miles and miles of untouched beauty. The hills and mountains are resplendent with thick forests and ground cover and more than 800 plant species and 30 tropical birds.

The majority of residents on St. John's 20 square mile island reside in picturesque Cruz Bay, the western port facing St. Thomas, and Coral Bay, a laid-back retreat along the east end.

ST. THOMAS AND ST. JOHN U/W: The proximity of these islands makes it convenient for operators to share many dive sites, so no matter where you stay you'll access a good sampling of the area. The waters of Pillsbury Sound between the two islands are bordered by groups of smaller cays with great diving and marine life. Several shipwrecks are quite popular here, having accumulated incredible encrustations of brilliant Orange Cup Corals along with a variety of gorgonians, sponges and soft corals.

The **Major General Rogers**, sitting upright at 65 feet in the midst of the channel, is subject to tidal changes, so dives here must be carefully planned. At slack tide, you'll have a better opportunity to comfortably penetrate the buoy tender's interior as well as explore the outer deck and hull. Night dives offer added appeal as decorator crabs, shrimp and other macro creatures roam about an intensely

colorful backdrop of yellow and orange *Tubastrea*.

Along the southwestern waters of St. Thomas lies another popular wreck with millions of *Tubastrea* clamoring for space. The 400 foot **WIT** (*West Indies Trader*) **Shoal's** multiple levels offer a variety of diving depths, from the 90 foot bottom to the wheelhouse just 35 feet below the surface. The twisted shape of a large crane on the rear deck, intact propellers, a deck winch with draping cables and numerous portholes and doorways make this a photographer's delight.

Unlike St. Croix, the underwater terrain of St. Thomas and St. John features a shallow plateau, with dive sites rarely exceeding 100 feet. Much of the bottom is formed by boulders and rock atop sloping mounds covered by soft corals. These serve as the base for prolific Orange Cup Corals and a variety of sponges and gorgonians.

Along the northern borders of Pillsbury Sound is **Thatch Cay**, where the underwater boulders have been etched into tunnels, archways and wide gullies. Just 40 feet deep, this winding maze of openings is best maneuvered with a guide.

Near the northwest point of St. John, **Carvel Rock** and **Congo Cay** also feature large boulder and rock formations. Carvel Rock is another dive best done at slack tide. Marine life is varied and frequently includes turtles, large Slipper Lobsters, Tarpon and jacks in pursuit of schooling Silversides, as well as various macro creatures. Congo Cay's encrusted rocks and pinnacles

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are also seasonally visited by Tarpon and clouds of Silversides. Marine life at these sites and other cays bordering north Pillsbury Sound (such as **Grass Cay** and **Mingo Cay**) includes Trumpetfish, Spanish Hogfish, schools of grunts and jacks, rays, turtles, crustaceans and a wealth of brilliantly colored sponges and corals.

The reefs to the south of St. Thomas

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are very similar, with sites such as **Cow and Calf** and the **Ledges of Little St. James** offering caves and swim-throughs topped by Staghorn and Elkhorn Corals and lavish Purple Seafans. **Coki Beach** is a great night dive, although usually swarming with tourists and cruise ship snorkelers by day.

Westward, beyond Charlotte Amalie, is a veritable treasure trove of dive sites, utilized most frequently by dive operators in the immediate locale. We enjoyed an extended encounter with a Hawksbill Turtle on our visit to **Tank Reef** and sighted several lobsters of gargantuan size along the way.

CONCLUSION: For diversity, old world charm and unique natural beauty, it's hard to beat the USVI as a dive destination. Easily accessed by air or sea, conveniently American in practicality, yet distinctly Caribbean in heart and soul, these islands offer the best of both worlds. Traveling among islands is a breeze, so you may easily include all three in your itinerary. From cosmopolitan nightlife to quiet relaxation, America's tropical paradise has something for everyone. 🐠

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In the next few weeks, someone will become the 2,000th instructor candidate to enroll at Pro Dive. And, to celebrate this milestone, Greg Mackay, who started Pro Dive in 1975, has created the Pro Dive 2000 Award. The 2,000th instructor student at Pro Dive will receive \$2,000 worth of PADI instructor continuing education classes. That's nearly a 100 percent scholarship for the remaining courses in Pro Dive's Phase II and III packages, which include DAN Oxygen Instructor, Medic First Aid Instructor, Master Scuba Diver Trainer, Nitrox Instructor and Pro Dive's trademark Resort Operations Specialist course.

The training record is even more remarkable when you consider it has been accomplished without Pro Dive's becom-

ing a faceless "instructor factory." In the course of writing several articles about Pro Dive, I have spoken with many graduates and they consistently comment on the high ratio of staff to students and the outstanding personal commitment of Pro Dive instructors. In spite of its huge accomplishment, Pro Dive is not about numbers. But, 2,000 instructors from one training facility is pretty phenomenal and I wondered where all of them are now. Did their Pro Dive training help them forge a long term career in the dive industry? To answer that question, I got on the

Dive for a Staff Instructor update on the PADI Assistant Instructor course and plans to eventually become a PADI Course Director. David now owns Adventures in Watersports, a Belize based dive operation with a 28 foot boat set up for six to eight divers.



ROS student Joan Burton explores the Jim Atria during a multi-level training dive.

Pro Dive to Top Two Thousand

PADI Career Development Center Trains 2,000th Instructor

TEXT AND PHOTOGRAPHY BY BILL HARRIGAN

phone and interviewed a few of the many Pro Dive alumni who have steadily advanced since their training.

David McGaughey became a PADI Master Scuba Diver Trainer and Medic First Aid Instructor at Pro Dive. He chose Pro Dive because its response to his initial query about training was efficient and well-organized but says he was most impressed with the professional, yet friendly, atmosphere when he arrived. He says, "Useful insights into how the diving industry works are an extra part of the Pro Dive experience that have been valuable to me." David recently returned to Pro

Pro Dive's good initial response also impressed Carolin Gatzke but the job placement program was the final decider. Carolin had already become an instructor in her native Germany but wanted to be able to teach in English, so she started with Rescue Diver, Divemaster and the Instructor Development Course. She returned to Pro Dive two years later to add Master Scuba Diver Trainer and Resort Operations Specialist to her credentials. She recently became manager of Mustique Water Sports, a dive operation with a staff of four on Mustique Island in St.

(Continued on Page 66)



Above: Instructor Trainer Dave Lawler (far right) supervises an emergency drill. Right: The Pro Diver II, a custom built 60 foot dive boat.





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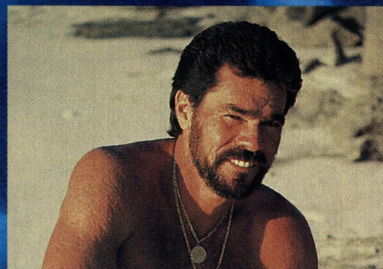
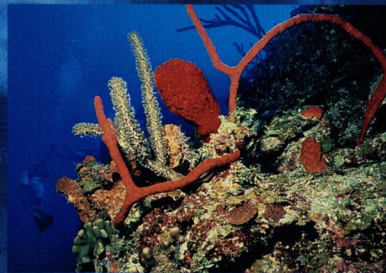
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Western Fiji

Fabulous Diving & Fun For All

TEXT AND PHOTOGRAPHY BY JACK AND SUE DRAFAHL

Believe it or not, there is more to do in this world than dive. Not all the divers we have met would agree with this but it's true. There is life beyond diving, especially in Western Fiji. Here you will find some of the most diverse outdoor activities you can encounter in one vacation.

The western side of Fiji is the driest part of the 300 plus islands and the best spot to find sun and fun. This area consists of islands known as the Mamanuca (Ma-ma-new-thuh) and Yasawa (Ya-sow-wa) Groups. The western waters are protected by the Malolo Barrier Reef, which shelters most of the western side of Viti Levu. Scattered throughout this protected area is a variety of small islands, featuring resorts that cater to family vacations by of-

fering watersport activities galore.

Getting to Western Fiji is easy. The ten hour flight from Los Angeles International Airport to Nadi will be the longest part of your journey. Once you reach the small, friendly airport on the main island of Viti Levu, you can stay in Nadi or take a boat taxi, helicopter or a short flight on a small plane to the western resorts. Most of the dive sites in the western region are only a short distance apart, so the prolific fish life and abundant corals are shared by several resorts.

To get an idea of the diversity found in these western resorts, we recently visited two of the most popular, just off the coast of Nadi.

We grabbed a boat taxi over to Mana Island, the largest resort found in the

Beachcomber Island Resort.



Top: Forster's Hawkfish (*Paracirrhites forsteri*) in hard corals. Above: Eerie swirls of fire are frozen mid-motion during a display of Fijian style dancing.

Mamanucas. This 300 acre island paradise features 70 beachfront *bures* (Fijian inspired cottages) and 90 tropical garden *bures* designed to fit all budgets. There are several restaurants with traditional and Fijian meals guaranteed to tantalize your taste buds.

Special activities are available to help your kids enjoy their vacation, too. The leeward side of Mana is where you will find all the watersport activities. This sheltered area is perfect for a wide variety of sporting activities, such as windsurfing, Hobie Cats, canoes, waterskiing, paraflaying, waterscooters, deep sea fishing or even riding in a yellow submarine.

Of course, the most important watersport—scuba diving—is a main activity at Mana Resort. The full service dive op-



Gray Reef Sharks (*Carcharhinus amblyrhynchos*) are frequently seen roaming the coral reef at Supermarket.

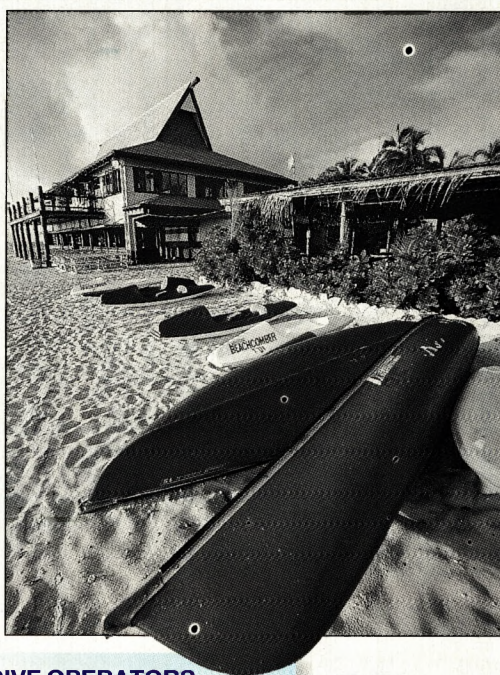


Above: A Fijian influenced bure at Mana Island Resort. Above right: With canoes and other watertoys there is always plenty to do at Beachcomber Island Resort.

eration is run by Aqua-Trek, a PADI Five Star Facility, well known in the industry. The dive shop is right on the beach, making it easy to load and unload the dive boats. Aqua-Trek offers rental gear; scheduled diving throughout the day; dawn and dusk dives on request; certification programs; and discover scuba sessions.

Because there is little or no current in the western islands, divers find diving easy. Most of the best dive spots are relatively close to the resort, so single tank dives are the norm. That way you can return to the resort between dives and relax. Remember, you are on vacation!

The dive sites range from 20 feet to beyond sport diving depths and usually feature coral bommies or pinnacles as the main attraction for marine life. One of the favorite dive spots, **Gotham City**, is



DIVE OPERATORS

For more information on diving Western Fiji, call:

Aqua-Trek (800) 541-4334

Beachcomber Island Resort (800) 521-7242

GETTING THERE

Flights to Fiji are available through Air Pacific and Qantas. The nonstop Air



Pacific flight from Los Angeles to Fiji's International Airport in Nadi is approximately 10 hours. The outer islands can be reached via the local carriers, Air Fiji and Sunflower.

Air Pacific
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home to Fiji's Batfish. They all swarm around as soon as you enter the water and are your constant buddies throughout the dive.

Another dive spot, billed as a world-class shark dive, is the **Supermarket**. Aqua-Trek's divemaster, Api Bati, handfeeds sharks on a regular basis. Gray Reef Sharks, Whitetips, Blacktips and Bronze Whalers circle around and welcome the divers as soon as the boat's engines shut down.

For a slightly different perspective, we headed to a very small island resort called Beachcomber. This is an island

for the young and young at heart. As we approached the island, we watched several guests, strapped into parasails, being pulled over the ocean on the rides of their lives. Others were trying their luck at windsurfing. A volleyball challenge was in full force as we checked in. Activities were going on everywhere we looked.

Beachcomber offers *bures* to fit every budget and lifestyle. You can have your own *bure* with bath or you can have a private *bure* with shared bathroom. It also offers a

dormitory style *Grand Bure*.

During the five minute walk around the island (we told you it was small), we noted the resort had additional sporting equipment for waterskiing, personal watercrafts, canoes, sailing, fishing and even a giant toboggan. As our island tour continued, we noted a party-size hottub, a miniature golf course and even an exercise gym. Night life includes delicious drinks, dancing and live bands to rock the night away.

The dive shop on Beachcomber is operated by Subsurface Fiji, Limited. It offers rental dive gear and PADI certifications. It is the only nitrox facility in Fiji and offers nitrox training as well as nitrox support for those already qualified.

Their proximity to Nadi International Airport makes the Western Islands a great vacation getaway. Warm weather, friendly people, good diving and water-sports galore are all the elements necessary for Fijian fun in the sun. 🐠

THE CAYMAN

Your Guide



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Three Jewels in the Cozumel Crown

Three Different Ways to Dive Mexico's Scuba Mecca

TEXT AND PHOTOGRAPHY
BY RICK FREHSEE



Above: A diver rounds a coral covered pinnacle.
Above right: Beachfront luxury is typified by the Fiesta Inn—a 180 room resort 10 minutes from San Miguel.



Cozumel successfully combines a rich, memorable dive experience with a unique Mexican Caribbean island atmosphere. In addition to incredible diving, there is a variety of accommodations from which to choose, including the Fiesta Inn, Plaza Las Glorias and Diamond Resort.

FIESTA INN

The Fiesta Inn, in the popular southern hotel district, is a comfortable, affordable leisure class hotel. From the resort, a short taxi ride or a pleasant 10 minute walk reaches the seaside town of San Miguel, the heart of Cozumel's shopping, restaurant and lounge areas.

The Fiesta Inn is a mid-sized low rise luxury beach resort. The architecture blends the traditional concepts of red tiled roofs, stucco surfaces and Spanish arches with modern construction. The horizontal panorama of guestrooms surrounds a spacious tiled court with a huge, beautifully shaped pool (actually the largest swimming pool on Cozumel).

There are 128 double guestrooms, 50 king sized guestrooms and two suites, all handsomely furnished in tropical decor. Each has air-conditioning, color satellite TV, direct dial telephone and private balcony.

In addition to the show-piece pool, there is a tennis court, beach and beach club with a private dock. Off a huge lobby and social area is a gift

shop, a boutique and entrance to lounges and restaurants.

Cafe la Fiesta serves lunch and dinner; the waterfront cafe serves Mexican fare, seafood and snacks; the Karaoke Bar and lobby bar serve drinks. Notable is the popular buffet breakfast featuring egg combinations, omelettes, fruit, yogurt, cereals, etc.

Dive Paradise, one of Cozumel's best established and most popular dive operations, picks up and drops off divers right at the Fiesta Inn dock several times each day. Night boat dives are also available. Cement platforms and ladders have been installed along the resort beachfront for easy shore diving.



Mexicana Airlines offers convenient flights to Cozumel from several U.S. gateway cities.



PLAZA LAS GLORIAS

Plaza Las Glorias is a handsome deluxe hotel of Spanish-Mediterranean architecture—Mexican tiles, marble floors and stucco walls on spacious grounds. Located seaside, it is just south of downtown San Miguel. Also popular, convenient and highly recommended is Dive Paradise, an established Cozumel dive operator that provides a fleet of custom dive boats; at least one of these vessels picks up divers at the PLG dock twice daily. For those looking for a luxury hotel with friendly service and a fun, safe and dependable dive operator, this combo is hard to beat.

PLG's distinctive look, conveniences and services are immediately recognizable. This resort is one of the most popular on Cozumel. Guests arrive by van at the main entrance just five minutes after leaving the international airport. Inside, just beyond the huge lobby/social area, is the entrance to the guestroom stairs and elevators. There are two restaurants: La Fuente, the stylish indoor main restaurant just off the south lobby, and La Palapa, the outdoor restaurant that overlooks a huge swimming pool, deck and the Caribbean Sea. Just north of the pool is a sandy beach leading to the ocean, dive dock and shore entry areas.

There are 170 superbly furnished rooms arranged in junior suites, master suites and duplexes. Each is air-conditioned, with an ocean view and a private terrace or balcony. The rooms are furnished with minibar, telephone and satellite TV. The resort has its own purified water plant.

DIAMOND RESORT

The beautiful, nearly new Diamond Resort is an all-inclusive property on a spectacular white sand beach, almost directly across from Cozumel's most famous reefs. From the Diamond dock, it is only six minutes to Santa Rosa Wall and three minutes to Palancar Reef.

The property is breathtaking. Probably the prettiest beach in Cozumel is at your back door. Three hundred guestrooms, four units upstairs and four units downstairs per villa, are handsomely furnished with king or double sized beds, telephone and TV. There are two huge, lagoon-shaped pools along a walkway that connects the lobby and mainhouse restaurant to the beach and dive shop. Nearly every resort amenity, sport or watersport is available.

Diamond Resort's on-site dive center, Dive Palancar, is one of Cozumel's best; several mid-sized, comfortable, modern dive vessels speed you to the nearby reefs. Because the better reefs are so close, this allows a schedule of five single tank boat trips leaving the dock each day—another Cozumel exclusive. You can sleep late or skip a trip during the



Above: Plaza Las Glorias is a deluxe, 170 room hotel; each suite is air-conditioned and features ocean views. Right: Dive Paradise meets guests at the dock daily.



day and easily get in three dives.

The all-inclusive package provides meals, drinks, gratuities, etc.

COZUMEL DIVING

Cozumel diving offers mountainous reefs, a diversity of marine life and arguably the clearest water in the entire Caribbean. There are more than 40 popular sites along the 25 mile westward reef tract, a large section of which is protected by a marine park.

Palancar Reef is a one-half mile long section of mammoth reef defined by a

white sand bottom on one side and blue infinity to the other. There are actually six separate dive sites along Palancar, including famous **Horseshoe Reef**. Known as the underwater Grand Canyon of the Caribbean, Palancar features towering pinnacles, yawning canyons and swim-throughs decorated with stunning sponges and Deep Water Seafans.

Santa Rosa, Cozumel's second most popular reef, is a continuous display of popcorn-shaped coral heads capped with orange and yellow sponges that tumble to a wall and reef slope. This reef system is often visited by big groupers and pelagics, all viewed in stunning visibility.

For more information on the Fiesta Inn, Plaza Las Glorias or Diamond Resort, contact Tropical Adventures Travel, experts in Cozumel diving, at (800) 247-3483, (206) 441-3483; fax (206) 441-5431 or e-mail 103520.2014@compuserve.com.



Above: Dive Palancar's Triton I. Below: The 300 room, all-inclusive Diamond Resort on the southern end of Cozumel.





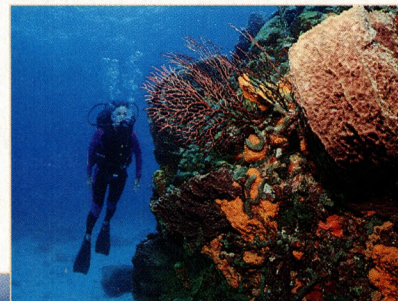
There is something particularly inviting about the Wyndham Morgan Bay Resort. Perhaps it's the enthusiasm of the staff or the way the resort complements St. Lucia's tropical beauty. Maybe it's the contagious enjoyment of the other guests, who are obviously having a great time on the beach and in the pool. Whatever the reason, arriving at the Wyndham is a great start to a dive vacation.

Nestled in 22 green acres on its own secluded bay, the Wyndham is designed for unwinding. The rooms have high ceilings, cool tiles, marble bathrooms and big balconies. The satellite TV with remote is there if you want it but you'll probably end up on the balcony watching the setting sun blaze a golden trail over the horizon. The grounds are expansive enough that they never seem crowded but not so large that you have a long hike to dinner. Hundreds of tropical plants provide splashes of color, fragrance and privacy. Down at the beach, watertoys are stacked neatly for your selection and everything is free.

Wyndham Morgan Bay is a true all-inclusive resort. Round trip airport transfers, room taxes and gratuities, all meals, unlimited wine and bar drinks and nightly live entertainment are all included. Water and land sports are also

free, including sailing, windsurfing, banana boat rides, waterskiing, paddleboats, snorkeling, volleyball, tennis, archery, a golf driving and putting range, aerobic classes, table tennis, croquet and badminton. The fitness center features spa quality exercise machines and weights, along with a steam room and spa. The Wyndham also has a superb conference facility, in case you want to have a seminar somewhere with good diving.

There are two restaurants on the property, usually offering a large selection for every meal. The Palm Grill is beachside and always casual. Sit down dinners in a more formal atmosphere are served at Tradewinds, where the service and food are first class.



Above: Kathleen Harrigan is dwarfed by the profuse sponge and coral growth of Anse Chastanet Reef. **Left:** St. Lucia Undersea Adventures' dive boat the *Denise*, a 40 foot Burpee. **Below:** Aerial view of Wyndham Morgan Bay Resort.



Petit Piton, a volcanic remnant of St. Lucia's primordial past.

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TEXT AND PHOTOGRAPHY
BY BILL HARRIGAN

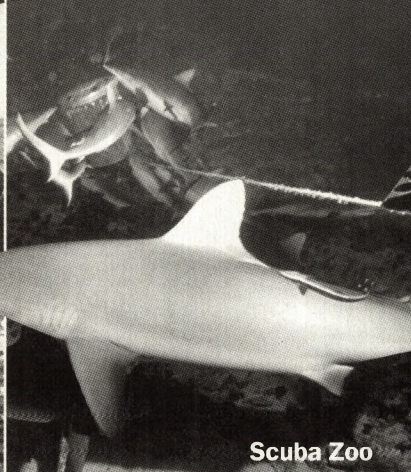
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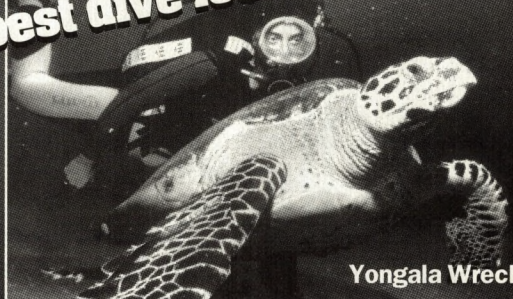
Aboard SpoilSport to the Coral Sea's best dive locations!

A black and white photograph showing a diver in profile, swimming alongside a large sea turtle. The diver is wearing a mask and a BCD. The turtle is swimming in the same direction, its head and front flippers visible. The background is dark and indistinct.

Mike Ball

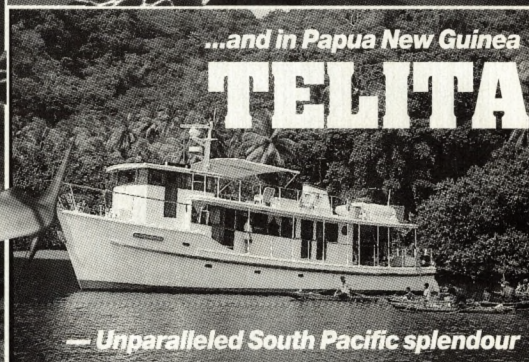


Scuba Zoo

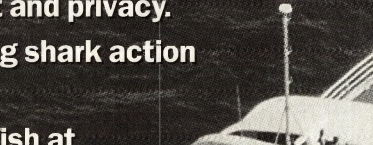


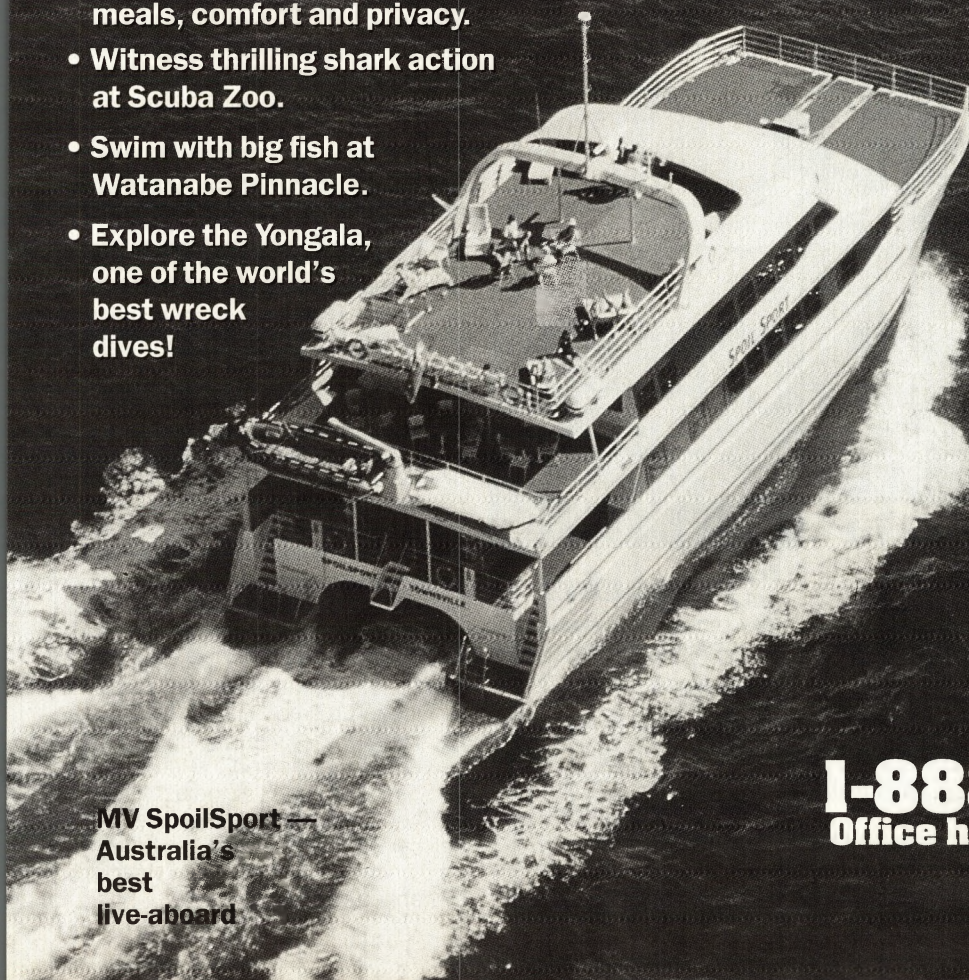
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ST. LUCIA UNDERSEA ADVENTURES

Tours to see St. Lucia by Jeep, horse-back, helicopter or sailboat can be arranged at the Wyndham's travel desk. These trips cost extra but are a great way to see this beautiful island. Most of the interior of St. Lucia is virgin rain forest and it is an entirely different world in there.

Children are especially welcome at the Wyndham, with a whole spectrum of supervised activities as part of the Kids Klub program. Kids Klub participants also receive free gifts, including a Fun Time 35mm disposable camera and a T-shirt. The program has separate activities for ages 5 to 8 and 9 to 12 and operates from 10:00 am to 4:00 pm. The Wyndham offers special rates for children, depending on the time of year and whether an adjoining room is needed.

ST. LUCIA UNDERSEA ADVENTURES

If you are staying at the Wyndham for a week on the dive package, five two tank dives are included with St. Lucia Undersea Adventures, the newest member of the Neal Watson Undersea Adventures family. Andre St. Omer, the owner and operator of St. Lucia Undersea Adventures, was an environmentalist on the island for more than ten years and was personally involved in setting up St. Lucia's protected marine areas. He loves St. Lucia and likes to share the island's underwater beauty. Andre has also recruited excellent staff members who make you feel comfortable on the boat and in the water. To meet the high standards of the Undersea Adventures dive operations, he recently acquired a custom 40 foot dive boat with a gentle ride and plenty of space. Two big ladders, a broad dive platform, cushioned seats, a freshwater rinse system and an exceptionally clean marine head make the diving safe and convenient. A 27 foot boat with twin outboards is also available.

St. Lucia Undersea Adventures operates on a schedule that makes sense for people on vacation. Pickup at the hotel is at 9:00 am for the five minute ride to the boat. The boat ride to the dive site takes between 40 minutes and an hour, along a route with some excellent sightseeing of Castries harbor and the west coast. Since the trip is on the leeward side of the island, the water is almost always flat and the ride is smooth. Each trip features two dives with a freshly prepared lunch served during the surface interval. The boat is usually back at the dock around 3:00 pm, leaving plenty of beach time before dinner. Night dives can be scheduled on request and custom videos are available in any format.

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ST. LUCIA DIVING

On the southwest coast of St. Lucia, the Pitons, majestic remnants of the volcanic upheaval that created the island, soar 2,000 feet into the blue tropical sky. Time has healed the scars on their scorched sides, wrapping them in the lush greenery of the rain forest and circling them with exotic birds. Below the surface of the clear blue water, the Pitons plummet almost vertically for thousands more feet. Down there, the flanks are covered in the mottled colors of the coral reef and decorated with the brilliant orange, red and purple of sponges. Schools of Creole Wrasse and Blue Chromis flit back and forth over the coral, like their airborne counterparts above. This is the St. Lucia reserved for divers and it is a fascinating place.

Coral Garden is directly below the larger of the two Pitons, featuring a steep slope with coral encrusted volcanic boulders in the shallows and boulders of Star, Giant Star and Brain Coral from 20 feet down to about 90. The site beneath Petit Piton is called **Superman's Flight** because the nearly vertical wall and frequent current make you feel as if you're flying. **Anse Chastanet Reef** features everything from caves to mini-canyons to walls, making it a great place to explore. The protection provided to this reef by the small marine reserve is obvious from the great number and species of fish present. Horse-eye Jacks, Bermuda Chub, Coneys and Banded Butterflyfish are just a sample of the species common here. This is a great reef for photography and video, with many subjects for both wide angle and macro. **Anse Le Raye Wall** starts as a gentle slope covered with Barrel Sponges, *Porites* Finger Coral, Brain Coral and Seaplumes. As you approach the southern point, however, it turns into a sheer wall with Deep Water Seafans and encrusting corals. Farther along, the slope moderates again and the bottom is piled with volcanic boulders overgrown with colorful coral and sponges. The **Lesleen M.**, a 165 foot freighter sunk as an artificial reef in 1986, sits upright in 65 feet. The main hold, engine room and bridge area are all easily accessible and the hull is overgrown with coral and sponges. The area around the prop and rudder is thick with White Telesio Coral.

TRAVEL INFORMATION

St. Lucia's settlement echoed the upheaval of its volcanic origins. The earliest inhabitants were peaceful Arawak Indians, who were overrun by the warrior Carib Indians. The Caribs made the first waves of both British and French settlers entirely unwelcome, killing nearly all of them. The French finally established a

(Continued on Page 52)

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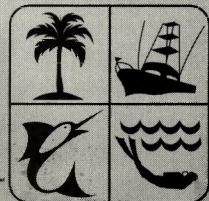
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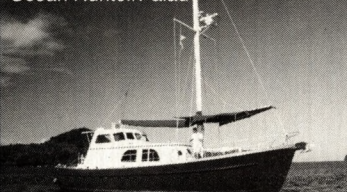


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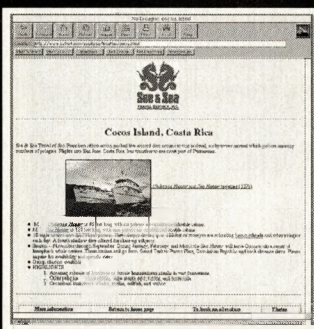
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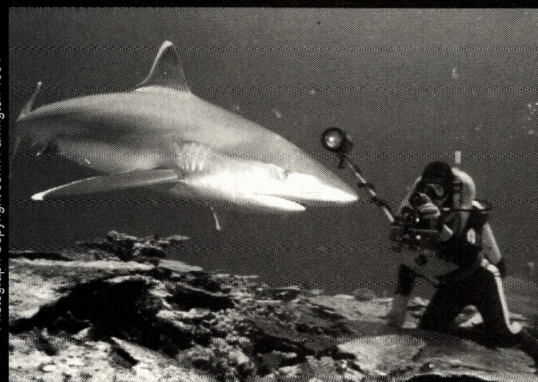
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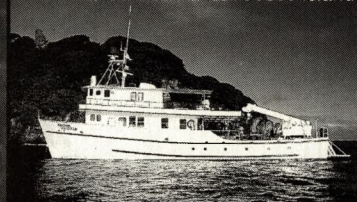


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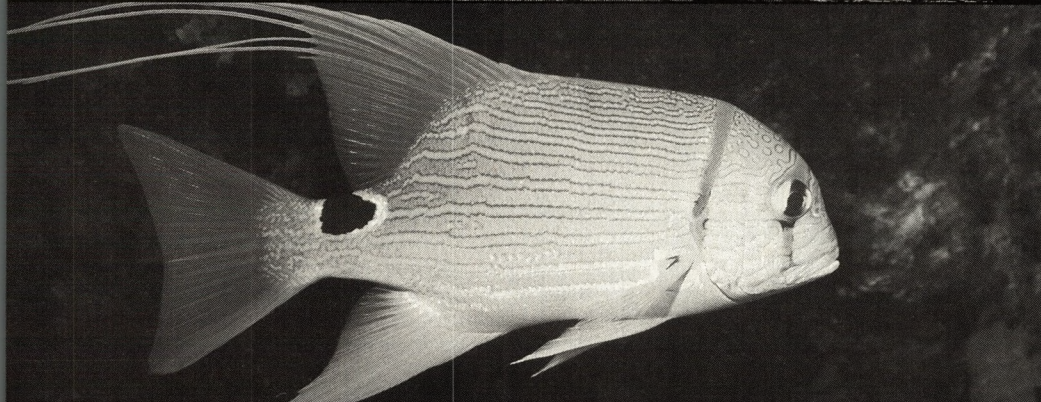
Sea Hunter/Cocos Island



Tiata/Northern New Guinea



Golden Dawn/New Guinea's Coral Sea



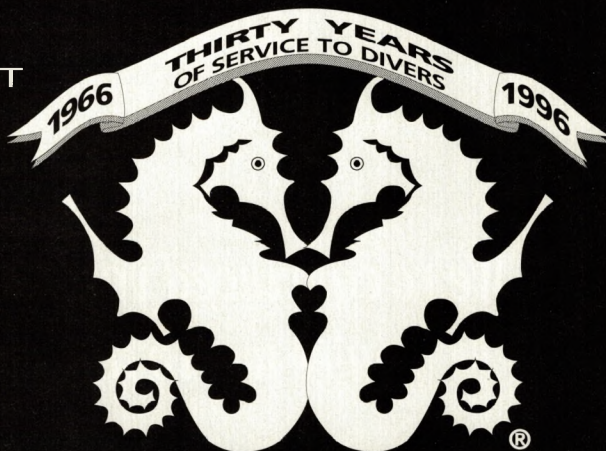
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ST. LUCIA UNDERSEA ADVENTURES


(Continued from Page 49)

successful colony around 1650 but afterward fought almost continuously with the British for control of the island. St. Lucia alternated between British and French rule 14 times before Britain prevailed in 1814. An independent member of the British Commonwealth since 1979, St. Lucia retains an endearing legacy of the past. Most names, such as Anse Le Raye, are French but driving is done on the left, British style. English is the official language but most natives also speak a unique French Creole.

U.S. and Canadian citizens may enter the country with either a passport or a birth certificate and photo ID. American Airlines provides service via San Juan to the Vigie Airport in Castries, which is only minutes away from the Wyndham. Service is also available to the Hewanorra International Airport at the south end of the island, an hour's scenic ride from the Wyndham. The Eastern Caribbean dollar is St. Lucia's official tender, trading at \$2.70 EC to \$1 U.S. U.S. paper currency and credit cards are accepted in most places, however, expect your change in EC. The electrical standard is 220 volts/ 50 cycles but adapters and transformers are available at the Wyndham front desk. Hair dryers are provided in each room.

St. Lucia is only 14 degrees latitude above the equator, so light summer clothing is appropriate all year. As with most Caribbean islands, swimsuits should be reserved for the beach or boat. "Island elegant" is the favored look for evening wear, which translates to long trousers and a collared shirt for men and a wide variety of resort clothing for women. Wyndham guests who prefer to dine in more casual style are always welcome at the Palm Grill.

Light clothing is also the rule underwater in St. Lucia because the temperature ranges from about 78 to 84°F. Most divers are comfortable in a T-shirt or Lycra skin in the summer and a shorty or light wetsuit in the winter. Visibility is generally 50 to 100 feet and is frequently in the high end of that range.

For reservations or more information, call Neal Watson's Undersea Adventures (800) 327-8150 (U.S. and Canada). From other locations, the number to call is (954) 462-3400. The e-mail address is nealwatson@aol.com and the mailing address is P.O. Box 21766, Ft. Lauderdale, Florida 33335. More information is also available on the Internet at <http://www.twofin.com/twofin/stlucia.htm>. 

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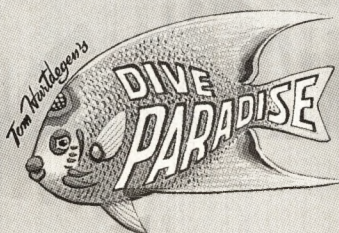
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NASDS

(Continued from Page 20)

vanced dive planning using the Dive Safe Pre-Dive Analyzer (logbook) and Air Consumption Slide Rule and an NASDS Dive Safe Table review, as well as introducing the NASDS philosophy. Video 2 augments the Deep Diving and Night Diving course elements and includes step by step procedures and equipment recommendations for planning and executing a safe dive under either of these conditions. Video 3 covers underwater navigation and the proper use of the direction monitor (compass), perhaps the most useful tool of the advanced diver.

The videos feature rich underwater settings and clear instructive presentations on the use and methods of the various tools, equipment and dive techniques the student will need to understand to complete the course. The videos convey the information in an easy to understand format, which easily builds upon the previous lesson and doesn't overload students with too much material at once. This enables students to retain the material easily; resulting in safer divers.

EXTRA GOODIES: In addition to the manual and tapes (illustrated in this article), the advanced diver course includes Dive Safe Tables, Dive Safe Equipment Systems Checklist, Dive Safe Calculator and Planning Slate and the NASDS PAL Logbook. This completes the Total Diving System package.

SUMMARY: The showpiece of any good training philosophy is the results and NASDS consistently produces superior results in well trained divers.

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For more information on how you can improve your skills and have more fun diving, contact NASDS at (800) 735-DIVE or write to 1012 South Yates, Memphis, Tennessee 38119. 🐠

TECHNIFACTS

(Continued from Page 24)

corals doing nothing and sponges sponging off the life that drifted by in the water. It was time for something new in underwater photography. In work I had to do on a diving job, I discovered black light photography.

Ultraviolet light, sometimes called black light, causes many substances to fluoresce. Fluorescence is defined as the

emission of electromagnetic radiation, usually in the form of visible light, resulting from the absorption of radiation. The fluorescence persists only as long as the radiation (black light source) is present. Photographing fluorescent objects is simply a more difficult type of photography with a different light source.

Normally, light is visible from about 7000A at the red end of the spectrum to violet at 4000A. Long wave ultraviolet light radiates at about 4000A to 3000A. Scientifically, this is known as near ultraviolet light. Shortwave or far, ultraviolet light radiates at about 3000A to 2000A. Some substances fluoresce best with longwave light; others are the most brilliant with shortwave light systems. Ultraviolet light can be harmful. Avoid exposure to eyes and sensitive skin.

I found a dual challenge in fluorescent photography of ocean life. First was the challenge of making the photograph. Second was the study of the varying degree of reaction to the ultraviolet light with the different specimens. Curiously, some specimens of the same species would be different. In the Map Cowry (*Cypraea mappa*), fluorescence varied in the same specimen at different times. In addition, there was a different degree of fluorescence under different kinds of black light. Some were always brilliant; others were ghostly pale and some didn't fluoresce at all.

There is no doubt something in the water that becomes part of the marine life causes it to fluoresce. Fluorescence is too variable within different species and within a single specimen to be otherwise. In a study of fluorescent minerals it was found that certain trace elements, called activators, caused normally dull minerals to fluoresce in brilliant colors. Some of the substances were trace elements of copper, fluorine, manganese, molybdenum and uranium salts. Traces of these elements are sometimes found as pollutants in ocean waters. I have often wondered if a few enterprising underwater photographers using black light could help unravel this mystery of the sea and, incidentally, detect a possible form of ocean pollutant.

A few of the marine life forms I have observed in black light include the following:

- *Cypraea mappa*—variable but usually very strong scarlet fluorescence.
- *C. subviridis*—a weak but showy scarlet.
- Chiton shells—a bright yellow band along the girdle.
- Corals—almost all species will glow a bright green or vivid blue. Each species, sometimes each individual of a species, glows a different color.
- Some land snails—the spotted *Helix* snail will fluoresce a bright yellow where its mucus has contaminated

the animal's shell.

- Some freshwater mussels fluoresce a yellow green.
- Some chalky-appearing fossil shells turn a reddish color under black light.

Small specimens of marine life can be carefully collected, placed in a well maintained aquarium, studied under black light, photographed and returned unharmed to their environment. Another way to collect specimens for study and photography is to visit the fishing trawlers of an ocean area. Their trash (coral, many kinds of shells, urchins, slugs, seaweeds and myriad other life forms) will become your treasure for study and photography with black light.

Edmunds Scientific Company, 101 East Gloucester Pike, Barrington, New Jersey 08007, usually stocks a variety of black lights. Some of the lights are portable and, with a little ingenuity, can be adapted to underwater use; much as you would adapt conventional flood or flash bulbs to underwater use.

The small unidentified coral colony illustrated on the first page of this article was dredged from deep water off Leyte Island in the Philippines. Its natural color was a drab gray. Under ultraviolet light it became a brilliant red gem. Can a Technifacts reader identify this coral specimen?

I have several references on black light photography. They were mostly published in the 1960s to 1980s but some may still be available or may be found in libraries. Technifacts readers who want a list (of the titles and dates only) of these references may obtain a copy by sending a stamped, self-addressed envelope to E. R. Cross, Technifacts, c/o SKIN DIVER Magazine, 6420 Wilshire Boulevard, Los Angeles, California 90048-5515. 🐟

Dive Notes

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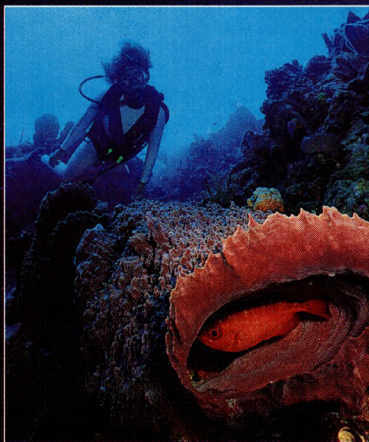
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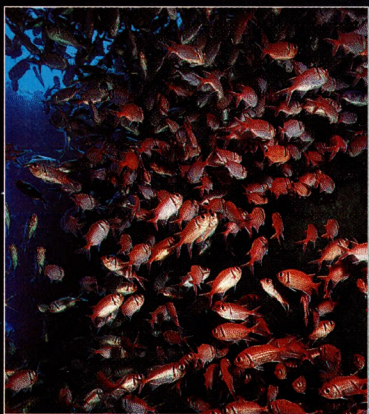
TEXT AND PHOTOGRAPHY BY STEPHEN FRINK

On my first trip to Dominica I didn't know what to expect from the diving. I had heard the sponges, gorgonians and other filter feeders were exquisite but was afraid such a recommendation might be akin to a blind date reputed to have a good personality. From the published wide angle photos I'd seen in dive magazines, I assumed the underwater topography would be lush and varied but I was most curious about the marine life. Unfortunately, too many places in the dive world offer minimal marine life these days. Since Dominica was a totally new experience for me, I wondered how it rated on my personal reef fish meter. Quite well as it turned out!

Our first dive was to a site known as **Dangleben's Pinnacles**. Just a few hundred yards offshore from the small fishing village of Soufriere, the pinnacles were clearly defined as patches of turquoise against a field of deep blue. Descending the mooring line, I saw a cloud of Creole Wrasse and Brown Chromis rimming the top of the pinnacle, a good first indicator. Then, while circumnavigating a pair of the pinnacles at 60 to 80 feet, I found Blackbar Soldierfish schooling in a profusion beyond what I'd seen anywhere else. Since colorful schooling fish are an ever popular stock photo subject, I spent half my film on this wondrous subject, not realizing at the time that Blackbar Soldierfish are found in thick clusters during most dives in Soufriere Bay.



Above: A wary Glasseye Snapper (*Priacanthus cruentatus*) is discovered in its favorite sponge hideout.



Background: Soufriere Bay is an enchanting volcanic lagoon. Above: A cluster of Blackbar Soldierfish.



Seahorse.

The big picture on this reef captivated me first—the perfectly intact finger corals, the colorful Azure Vase Sponges, the seawhips and gorgonians, all washed by blue water with 80 to 100 foot visibility. I could see why so many of the photos I had seen published were of the wide angle variety, for these were truly stunning compositions. However, once I'd finished shooting with my 15mm lens, I forced myself to look at the reef minutia to find subjects for my Nikonos RS and 50mm macro lens. This was equally impressive as I came across a pair of mating frogfish, a cooperative Whitespot Filefish, six different species of hamlet, three species of pufferfish, triggerfish, parrotfish and more gobies and blennies than I could possibly count or identify. A Hawksbill Turtle even made a brief appearance. If my first introduction to Dominica diving was any indication, this was a serious fishwatcher's paradise.

Later dives along other sites in Soufriere Bay confirmed the wealth and diversity of marine life. While I did not see



big groupers, Eagle Rays or sharks, at **Soufriere Pinnacle** I saw four different frogfish on a single dive and at **Scotts Head Beach**, in only 20 to 40 feet of water, I was able to photograph Peacock Flounder, scorpionfish, a seahorse and even a Flying Gurnard. At **Crater's Edge**, a particularly brazen Barracuda stood its ground against my strobe blitzkrieg and the night dive at **Coral Garden** produced Orange Ball Corallimorphs and dozens of basketstars. Glassy Sweepers choked the cave at **Point Guignard**. At famed **Soldierfish Cave** (a portion of Scotts Head Pinnacle), a swim-through cavern 20 feet high was filled floor to ceiling with Blackbar Soldierfish.

The western shore of Dominica lies in the prevailing lee and this is where most of the diving happens, especially around Soufriere Bay and Scotts Head. The island is volcanic in origin, obvious at a glance both underwater and topside. Soufriere Bay, for example, is a submerged crater with the east and south rims of the caldera forming the coastline, the northern edge barely submerged

(Continued on Page 59)

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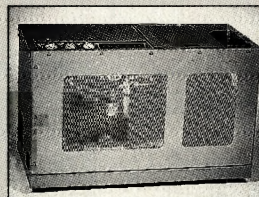
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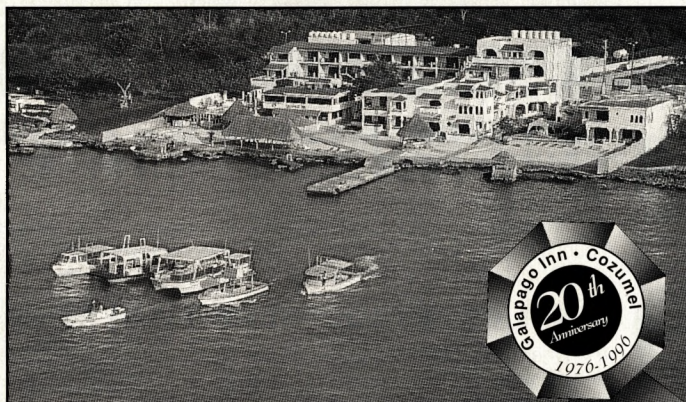
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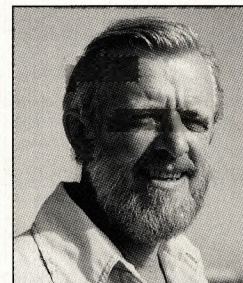
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IN MEMORIAM:

Dick Birch

Dick Birch, builder and operator of Small Hope Bay Lodge on Andros Island in The Bahamas, died June 9, 1996. He was laid to rest in the Tongue of the Ocean off the Andros Barrier Reef.



photo/Geri Murphy

Born in Toronto in 1925, Dick moved to The Bahamas with his family in 1959. Small Hope Bay Lodge, the first dive dedicated resort in The Bahamas, became a Mecca for divers and a trend setter in the diving industry. An avid diver, Dick Birch was the first to explore the Andros Wall and its 6,000 foot drop-off. In 1962, he set the world record for deep diving on compressed air—463 feet! Birch was among the first explorers of the blue holes of Andros.

Birch virtually designed what is known today as the resort course. He was a founding member of the Bahamas Dive Association, as well as founding member and three time president of the Out Island Promotion Board. In 1973, he co-founded Androsia, a batik clothing factory, to further cottage industry employment on Andros.

Friends, neighbors and colleagues gathered for a memorial service at Small Hope Bay Lodge on June 15. Among those who paid tribute were government representatives and The Bahamas Ministry of Tourism, Bahamian hoteliers and members of the diving industry. John Englander of UNEXSO called Dick Birch "a pioneer—not just in The Bahamas but in diving and at life." Dr. Joseph MacInnes, a longtime friend, said, "Dick led us 'over the wall' to look at the abyss, literally and figuratively." Former Bahamian Prime Minister Lynden O. Pindling paid this tribute: "Dick has left us a wonderful legacy of love for one another, a deep appreciation of the environment and a full realization that in a country of small islands, small is indeed beautiful."

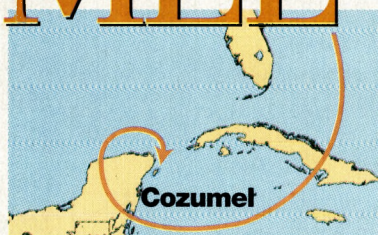
In his honor, the Dick Birch Educational Memorial Fund has been established (c/o Canadian Imperial Bank of Commerce, Shirley Street, P.O. Box 7125, Nassau, The Bahamas, Attn: Brian Butler, Account #7538367 S/A). Donations will go to purchase supplies for the primary and high schools of Central Andros.

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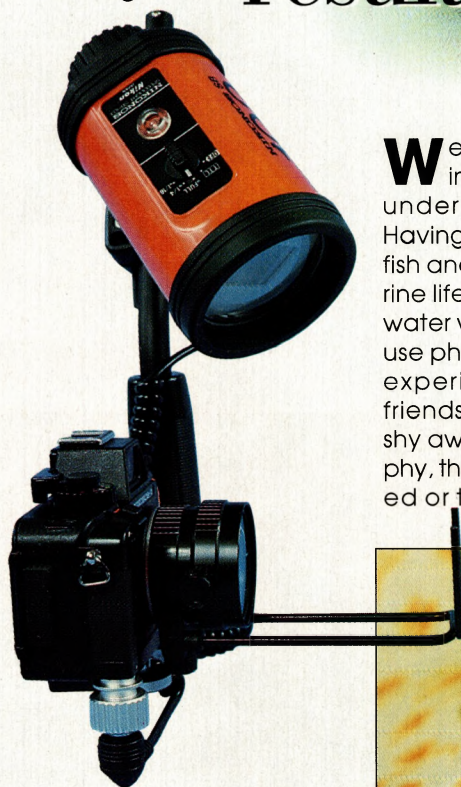
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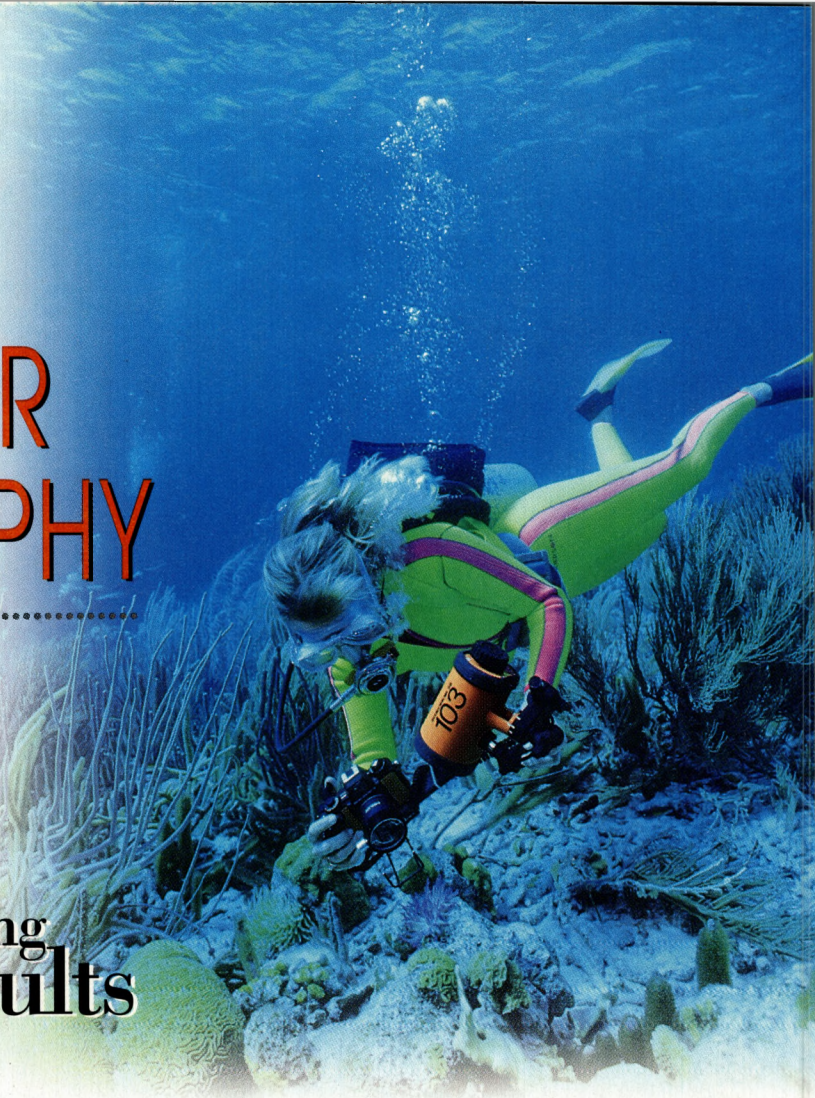


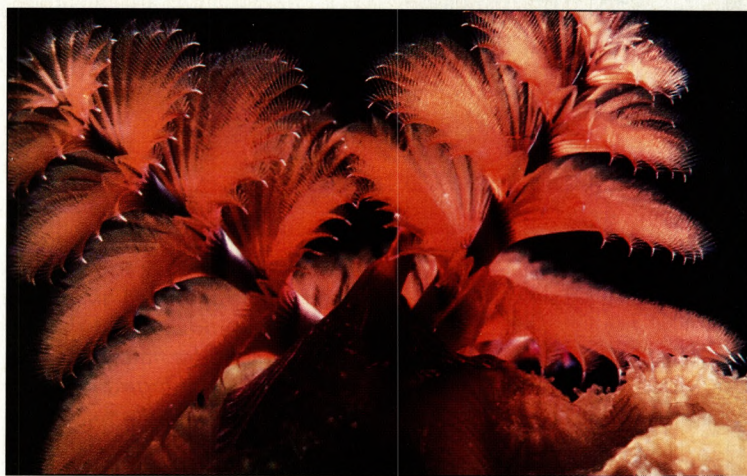
Using a Nikonos V equipped with an extension tube and framer as shown above, it is easy to get great shots of small reef creatures.

Welcome to the fascinating, challenging world of underwater photography! Having discovered the myriad fish and brilliantly colored marine life that inhabit the underwater world, it's only natural to use photography to share the experience with family and friends. And, while some may shy away from U/W photography, thinking it's too complicated or technical, it is, in fact,

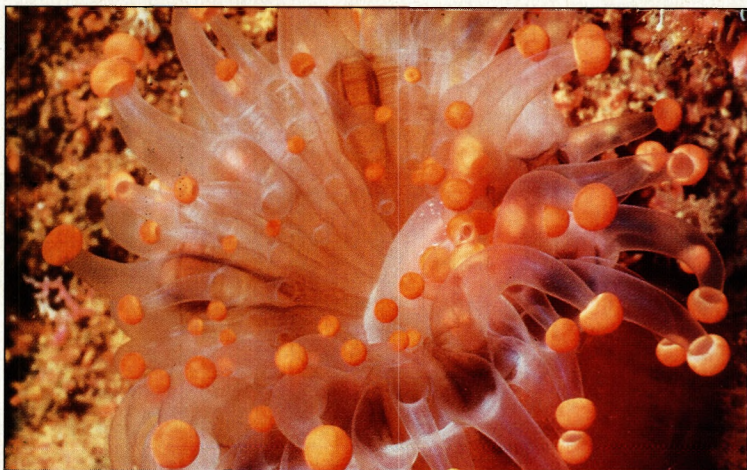
much easier to learn than diving. And, you'll be taking great pictures from the very beginning. The editors of Nikonos Technique Magazine, among the foremost U/W photographers working today, universally agree on the best advice for a new U/W photographer: Start with macro and close-up.

Before we go much further, we'd better explain exactly what we mean by macro and





Macro shots are rich in color and detail. A 1:1 extension tube and framer captured the Christmas Tree Worm (above); a 2:1 extension tube and framer was used to shoot the Orange Cup Corals (right).



close-up. This type of U/W photography concentrates on small subjects such as corals, shrimp, anemones and invertebrates (about 95 percent of the underwater population). These small subjects are among the most unique and they come in a riot of shapes and colors. Macro and close-up photography allow you to capture stunning pictures of these creatures. Because the lenses and easy to use accessories are all coordinated electronically, this is also one of the easiest ways to get excellent exposures. All of the photos you see in this article (with the exception of the diver actually using a macro rig underwater) can be taken by a new student. You might need a little help finding some of the subjects but there are plenty of divemasters and photo pros who are eager to assist. And, who doesn't have a blank wall

somewhere that's just waiting for a dramatic, colorful photo?

Here's the basic approach to taking great macro photos. After you set up the camera (more about this easy function later), you set specific exposure controls. All you do is move two or three knobs and you're ready to go. Then, it's into the water and you begin your dive, keeping an eye out for subjects that will fit into the framer on the front of the lens. As long as the subject (or a significant part of it) fits into this framer you'll get the picture simply by pressing the shutter. You'll find the U/W world teeming with appropriate models. Of course, some marine life models (such as Banded Coral Shrimp) are easy to photograph, while others are a little more difficult to approach. Patience will reward you with great photos.

The basic equipment used for



Above left: Extremely light-shy, the uncommon Orange Ball Corallimorphs extend their tentacles only at night. This photograph was shot with a 35mm lens and the Nikonos Close-up Outfit.

macro and close-up photography begins with the most popular U/W camera in the world, the Nikonos V. Manufactured by Nikon, this camera is used universally by U/W photographers and is the basic starting point for all underwater shooters. You'll also need a lens. The 35mm is the most popular choice (and also the least expensive) for macro shooting. Then you'll need a light source—a strobe—to add brilliant color to your shots. This combination of camera, strobe and lens is the basic tool for all underwater photography. Setting up the gear is simple and the instructions are surprisingly easy!

After you set up the basic system, you then select the appro-



Set on TTL, the Nikonos V and a Nikonos strobe work together to control the amount of light reaching the film, producing correct exposures time after time. The octopus (left) was photographed with a 28mm lens and Nikonos Close-up Outfit. The Honeycomb Moray (below) was photographed with a 1:3 extension tube and framer.

ropriate macro or close-up accessory. These come in a variety of sizes and enable you to take pictures as small as the tip of your little finger to just a little larger than your hand. The macro tubes have an extension ring that fits between the camera and the lens. The close-up units attach over the lens. Both macro and close-up utilize sets of framers. All you have to do is make sure the subject fits in the framer and you will get in-focus pictures. Although the size of the framers for macro and close-up differs, the techniques for using them are exactly the same. You find a subject, frame it and shoot!

For dazzling colors and exposure control, the Nikonos V's TTL system can't be beat. The camera and strobe work together to measure the amount of light reaching the film (Through The Lens, which is where TTL comes from) and correct it so nearly every exposure is flawless. How hard is it to set up? Make sure the ASA/ISO dial is set to the correct film speed. Then, set the shutter speed to A; turn the strobe on and set it to TTL; set the aperture to f/22; set the focus to minimum (close-up) or infinity (macro); and shoot. Hang the photo on the wall a week later!

While macro and close-up are by far the easiest types of U/W photography for a beginner, they're by no means without challenge. First, you have to find the subject—the rarer and more colorful the better. Then,



the critter has to fit inside the framers. Two important guidelines: Make sure the subject fills as much of the frame as possible and always make sure the eye of the subject is exactly in focus. A little practice is sometimes needed here but you'll get it in a roll or two of film. After you have the basics down, you'll also find there's lots of room for improving even your best shots. Many experienced U/W photographers shoot macro all the time and nearly everyone shoots it while night diving. The night—underwater at least—belongs to the invertebrate world and there's a good chance that bashful octopus you saw on the afternoon dive might be willing to pose for you at night.

As you get more experienced, you will also want to play with exposure settings. As you alter the amount of strobe light applied to your subject, you'll see its color change. The automatic TTL system is set up for neutrally colored subjects and will yield dramatic results most of the time. But, if your subjects are very light or very dark and fill the entire frame, you may want to put more (darker subjects) or less (lighter subjects) light on them. Instead of changing the strobe setting, however, the easiest way to do this is by changing the film ISO dial on the camera.

Here's an example. You find a frogfish while diving off the island of Bonaire. The frogfish appears dark orange, similar to the orange encrusting sponge it calls



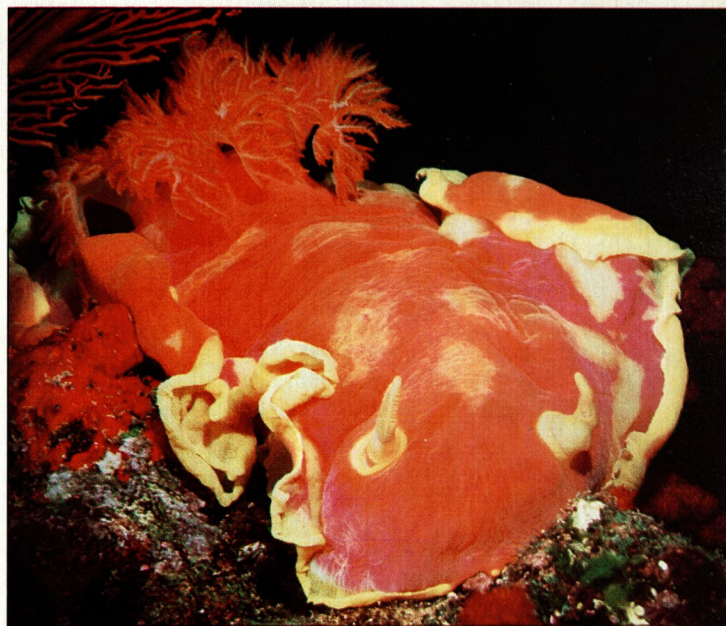
Artificial light brings out the colors of denizens of the deep. While the Spotted Scorpionfish (left) appears drab to the eye U/W, the flash of the strobe captures all its multicolored glory on film. Below: The Spanish Dancer is another macro critter whose true colors are revealed by strobe light.

home. You load the camera with ISO 100 film, a common choice among U/W shooters. You correctly set the camera, strobe and lens controls and take the picture. On film, the shot looks good but not great. The frogfish is a little dark, which seems strange since orange is such a bright color. You've just discovered one of the most important aspects of both topside and underwater photography. Your eye sees color different than film and artificial (strobe) light changes the colors your eye sees to the colors inherent in the subject. In the case of the orange frogfish, what appeared to be a bright subject is actually a notorious light eater! In other words, it takes a lot of light to make the subject pop out of the photograph. Instead of setting the ISO dial to 100, you would be better off setting it at 50, so the

strobe will put out twice the light and brilliantly expose the picture.

This technique is called bracketing and is used by nearly all photographers. Unless you happen to live on Bonaire, a frogfish is not an everyday experience. Taking just one shot of it leaves too much to luck and chance. If you want that frogfish looking over your shoulder at work, here's how an experienced U/W photographer would take the shot.

First, the photographer would set the ISO dial at 100 and take three to six shots, changing the angle and making sure the fish's eye was in the framers. Then he/she would change the ISO to 50 and repeat the se-



quence. You can be nearly 100 percent sure you'll have the shot if you follow those tips. For subjects that require less light, move the ISO dial in the opposite direction, to 150 or even 200. The strobe makes the automatic adjustment.

There is no better way to get started in underwater photography than with macro and close-up. It's technically easy but yields great results. You'll learn a lot about subject selection, film, color and artificial light, all of which are valuable basic skills to continue to explore the challenging world of underwater photography. 📷

This orange Longlure Frogfish was photographed with a 35mm lens and a Nikonos Close-up Outfit.





THE NEXT STEP:



fish photography with the 35mm & 28mm lenses

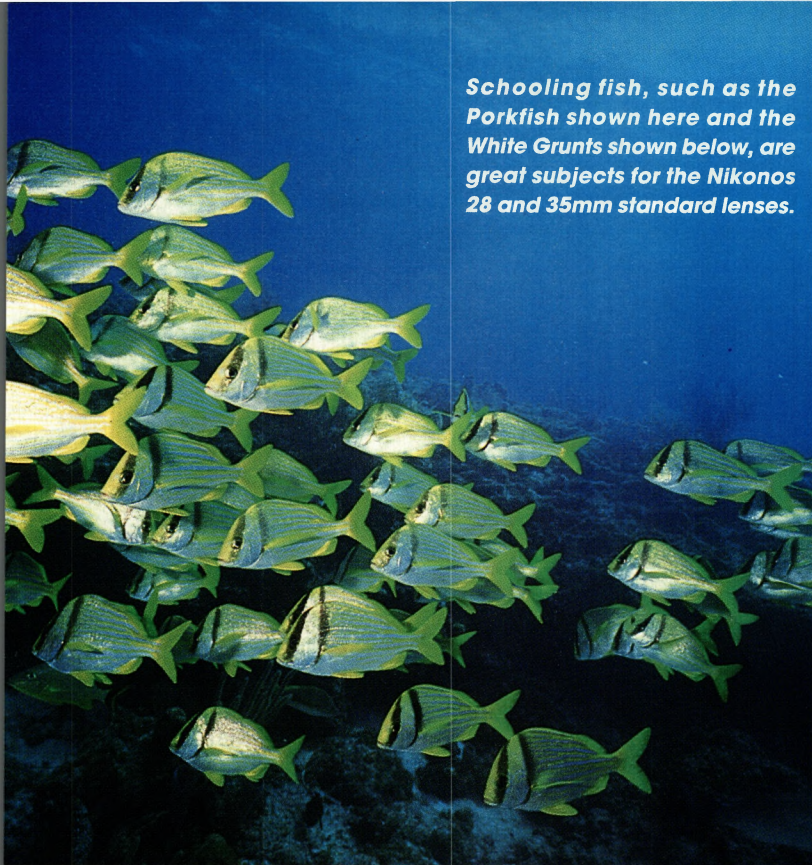
The Nikonos V and either a 35 or 28mm lens can be used to photograph schooling Schoolmasters (above) or the head and shoulders of a Nassau Grouper (below).

While macro/close-up photography may be the easiest way to learn underwater photography, two of the best kept secrets are the Nikonos 35

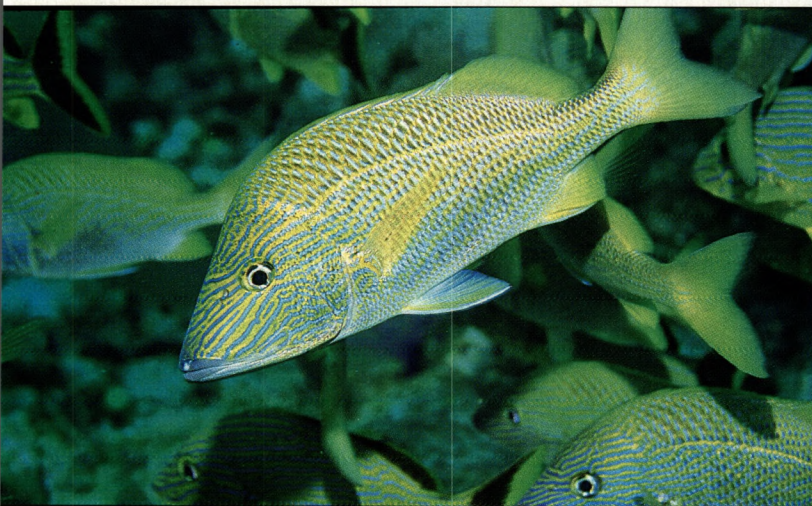
and 28mm lenses. These are just as easy to learn to use as macro and close-up accessories but are often overlooked by beginner photographers. The following story is typical.

A diver rents a camera or is lent one by a friend. Knowing nothing about macro/close-up, the diver receives a universally standard setup: Nikonos V, 35mm lens and an SB 103 or 105 strobe. The unit is self-contained and automatic and the diver receives the quick instruction to just look through the viewfinder and take the picture. After all, the camera has been preset to automatic and will do all the work. All the diver has to do is find some interesting stuff underwater and snap the pics! This seems simple enough and soon the diver is at 50 feet, snapping away and





Schooling fish, such as the Porkfish shown here and the White Grunts shown below, are great subjects for the Nikonos 28 and 35mm standard lenses.



feels pretty cool. Hey, that underwater photography's not as tough or technical as he/she thought!

Then, the moment of truth arrives. The diver gets his/her slides or prints back. While some of the pictures are pretty good (one or two are even great), somehow it didn't all click. What was seen underwater isn't represented on film. The fish looked much, much bigger and the scene certainly didn't seem as blue as it looks in the photos. And, what happened to that great shipwreck

shot? It sure looked better underwater than it does on film. What happened?

There's a classic tombstone line that reads "Brought a knife to a gunfight" and that's what just happened! The basic Nikonos system, equipped with electronic strobe and either a 35 or 28mm lens, takes great pictures underwater. But, it is not a great underwater snapshot camera and is not designed to take big, scenic pictures. This is not the fault of the camera—the simple truth is that a very good underwater

snapshot camera simply does not exist. There is no camera in the world that can be taken underwater, used like a topside snapshot camera and give you the same results. It just can't happen, at least not today. So, start with the idea that taking pictures underwater, while easy, needs some specific simple instructions for each type of photography you try.

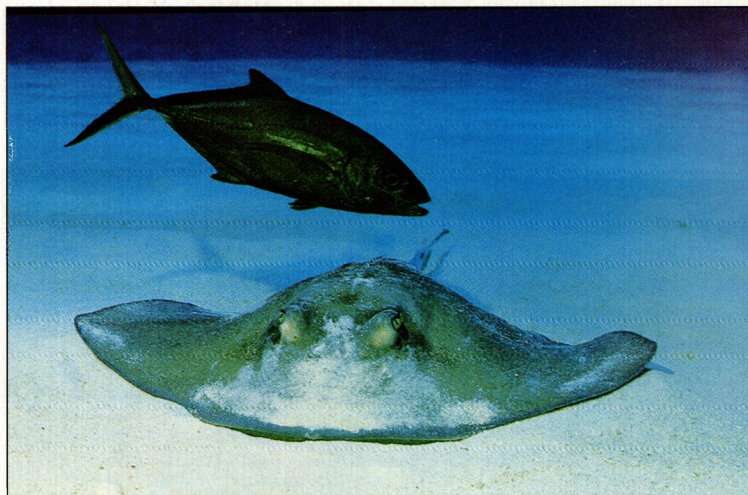
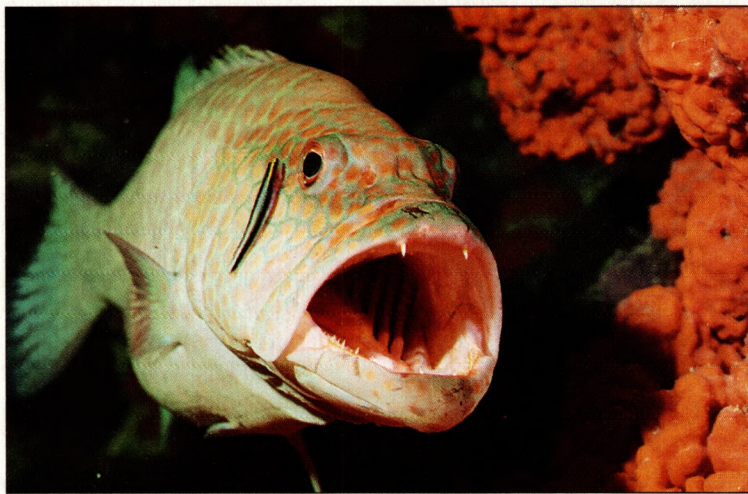
In the case of standard lens photography (the 28 and 35mm lenses are referred to as standard, since they see the world in much the same way your eye does), there are only a couple of lessons to be learned in order to take great pictures. Rule number one is simple: Do not use the Nikonos as a snapshot camera. You will not see on film what you see underwater, particularly if you are more than two to three feet away from your subject. If you are six feet away from your buddy, for example, your eye can easily see the gauges, mask color and details. Take this picture and your buddy will appear a monochromatic shadow of blue and black. This is because the ocean acts like a giant blue filter and the film will record only the blue portion of the scene, not what your eye sees. The second reason is that water absorbs light and the strobe is only effective to a maximum distance of three to four feet. Forget about panoramic shipwreck shots or a picture of four of your best buddies together. Instead, get

Artificial light is essential for fish photography. Here the Nikonos V is equipped with a Nikonos SB 105 strobe.





A Golden Coney (this photo) or a Tiger Grouper (below left) being serviced by gobies at cleaning stations are excellent examples of marine life interaction shots.



To get great shots using the 28 and 35mm lenses, photographers must get close to their subjects, such as the Southern Stingray and Bar Jack shown above.

close to your subject, never more than three feet away, and plan your shots accordingly. Instead of an entire diver, take a head and shoulders shot. Three feet is only about an arm's length from the camera so this takes a little bit of practice.

We've really covered two rules here, so let's repeat them:

1. Don't use your Nikons as you would a snapshot camera.
2. Get *close* (not more than three feet away) to *all* of your subjects.

Once you learn these two simple rules, there are also the basic rules of physics to contend with. These are, simply, that all objects underwater appear 25 percent larger and closer than they actually are. That happens to be true unless you have an underwater camera. Then the law changes to "all fish appear 100 to 200 percent larger underwater." This "law" is not true, of course, but you wouldn't know it looking at a collection of first time underwater photo efforts. All the fish appear to be tiny.

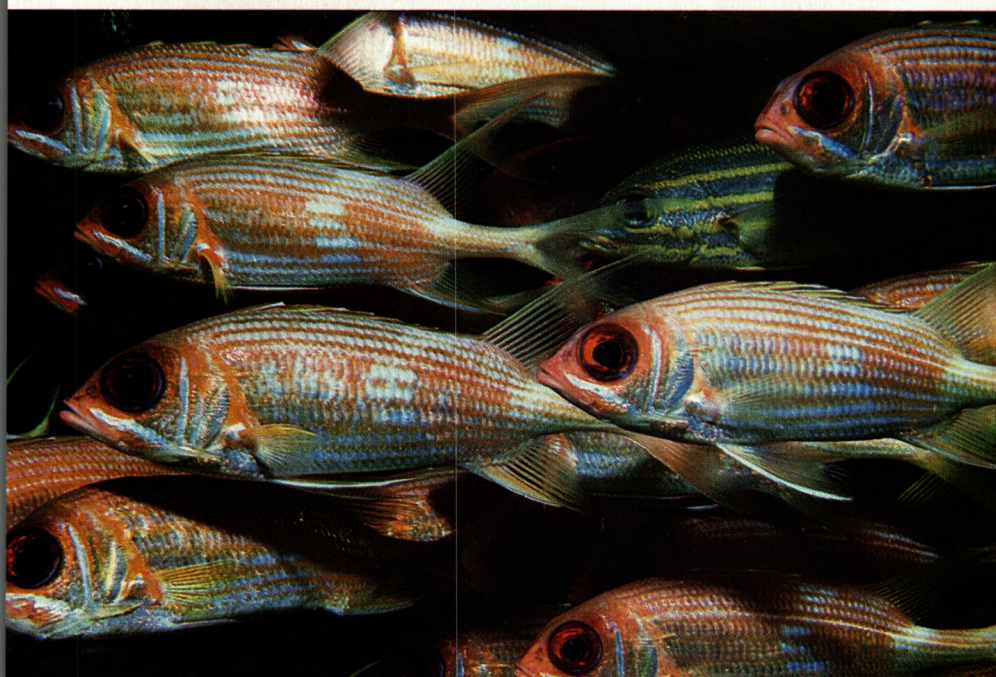
Why? Often, they *are* small! A six inch fish should be photographed with a close-up kit. It's best to find another fish, preferably one about two feet

long. If you can't find a relatively large fish, find a school of fish. Then you'll get great results. The other reason fish seem to defy the laws of underwater physics is also very simple. When you look through the viewfinder of a camera, you have a natural tendency to concentrate on the exact center of the viewfinder. Your eye and mind tell you, "If it's right in the center of the viewfinder, it will be in the center of the photo." And it will. But that won't help you if it just looks like a speck of dust on the photograph. Remember to look at the entire image in the

viewfinder. When the viewfinder is at least 50 percent full, it's time to shoot the picture.

How hard is the technical side of exposing the film in standard photography? Easy, as long as you don't try to make the camera do something it's not intended to do. Using ISO 100 film, simply set the camera on A. Turn the strobe on and set it on TTL. The distance control (on the lens) should be set at minimum (2.75 feet for a 35mm lens and 2.25 feet for a 28). Keep all these settings for the entire photo dive. The only manual change you will make

error beginning underwater photographers make that wastes a lot of film. This one concerns camera angles, that is, the direction in which you aim the camera to take the picture. Never aim the camera down. Always aim horizontally at the subject or horizontally with a slight up angle. This is very important. As divers, we are trained to look down at the marine environment. But, aiming the camera down at a subject will make the picture very, very dark, even when a flash is used. So, try to photograph fish eye to eye and you'll get some



Don't expect bright, colorful photographs if your subjects are not bright and colorful! Before triggering the shutter release, make sure the image fills at least 50 percent of the viewfinder. Also remember to shoot on a horizontal or slight up angle. Left: Squirrelfish and a lone Smallmouth Grunt form a school. Below left: A crowd of Black-bar Soldierfish.



during the dive is to the f/stop (also on the lens). This should be set according to the depth of the water in which you are diving:

1. 0 to 20 feet—f/11
2. 20 to 50 feet—f/8
3. 50 to 80 feet—f/5.6

This assumes you're diving in warm water between the hours of 9:00 am and 4:00 pm and the sun is shining. If it's cloudy, use the next lower setting at each depth level (i.e. f/5.6 at 20 to 50 feet when overcast). That's all you need to know to get great pictures with a standard rig.

There's one other common

really great shots.

The very best subjects for 35 and 28mm lens photography are fish. If fish are solitary, make sure you find one that is at least one and a half to two feet long. If you can't find one that big, shoot a school of fish instead. Groupers and other large fish (rays and large Green Morays) make excellent single subjects. Grunts, jacks and Schoolmasters are excellent schooling fish subjects. So, for instant great standard lens photographs, concentrate on fish as subjects, get within three feet of them and you'll get some great shots. 📷

BASIC EXPOSURE TECHNIQUES

TTL & the Nikonos deliver high quality results



In previous articles we have referred to using your flash on TTL auto flash exposure. The reason for this confident advice is based upon two facts. First, you

will have plenty to do underwater just focusing and framing your subject. You would be well advised to become proficient at these two technical skills first

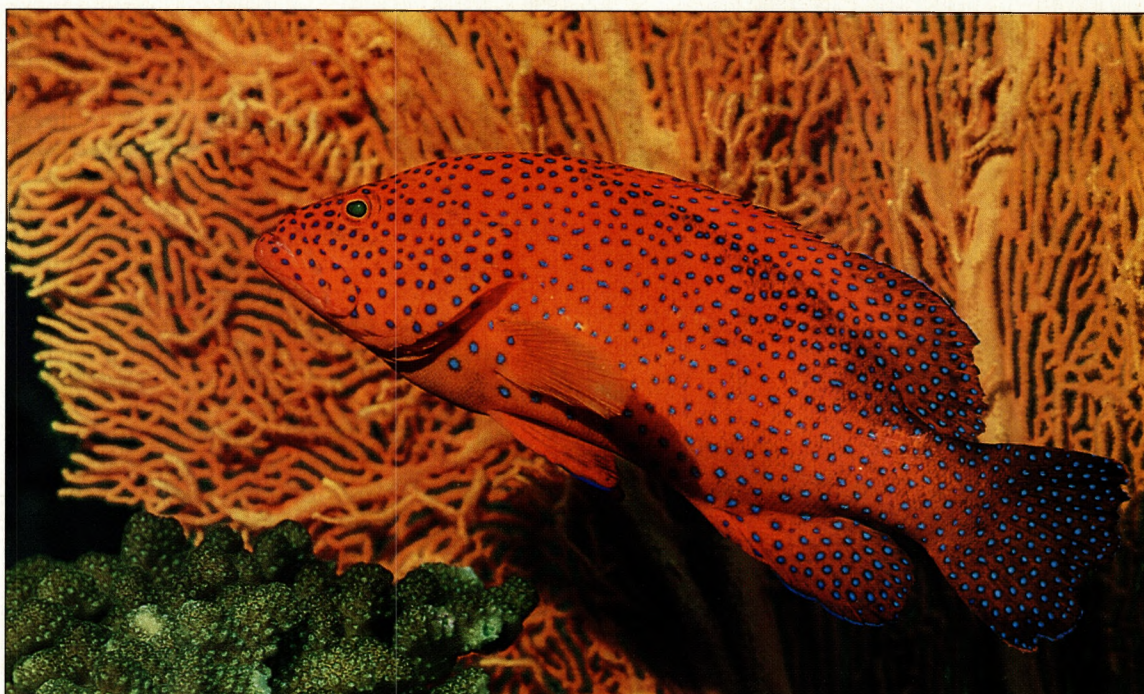
before tackling the complexities of exposure control. It will be more productive, not to mention more fun, concentrating on the hunt for interesting subjects and composing the picture.

The second fact is just as easy to understand. In most photo

situations, TTL auto flash exposure is extremely accurate in rendering the vivid colors and great overall exposure of your subject. It automatically compensates for many of the factors you would have to take into account in determining manual exposures. This accuracy is reassuring because you will know you can count on going home with great photos. Accurate exposure control without tedious mathematical calculations—while enjoying the dive—is a forecast for a great day underwater.



When the subject fills at least 50 percent of the frame, TTL auto flash is extremely accurate, producing well exposed photos with vivid colors. Fish photography is especially easy with TTL. The photos of the Emperor Angelfish (above) and the school of Pyramid Butterflies (left), were shot in this mode.



TTL DEFINED: TTL stands for Through The Lens. It describes how light is measured by the flash meter built into the Nikonos V, Nikonos RS and most other SLR cameras. It is unlike separate, external auto exposure meters. Instead, this lightmeter is inside the camera body, next to the film plane. It is different from the ambient light meter that helps determine the background exposure for natural light because it actually measures the light that passes through the lens and strikes the film. TTL, therefore, is more accurate than any external meter. Considering the speed of the film that has been set on the ISO dial, the camera can easily measure the correct amount of light needed and controls the duration of time the strobe burns, shutting it down at exactly the right moment to create precise exposures.

CHOOSING AN APERTURE: The lens aperture varies the amount of light that enters the camera. The magic of TTL, however, compensates for whatever aperture you select because the TTL flash sensor measures the actual amount of light striking the film. If you choose a large aperture such as $f/4$, the TTL sensor sees a great deal of light and shuts down the strobe

TTL is more accurate than an external lightmeter can ever be because it measures the artificial light striking the film. Above: A Coral Grouper is reproduced on film in living color.

more quickly than if you select a small aperture such as $f/16$. Therefore, as you change apertures, the Nikonos TTL sensor varies the duration of the flash accordingly and the result is a consistent flash exposure on your foreground subject.

It is recommended you begin by using apertures such as $f/16$ and $f/11$, with substantial depth of field. This will make your subject placement and the focusing process easier. Of course, you may have insufficient ambient light to allow you to create a well exposed background and may need to open up to $f/8$ or $f/5.6$.

APPLYING THE ARTIFICIAL LIGHT: Following the aperture suggestions previously offered, you need only approach the subject and get within the usable TTL range. For exact distance information refer to the instruction manual that came with your strobe. Basically, you should get within two to five feet of your subject at an aperture range of $f/5.6$ to $f/11$ in most situations. Once within this range, your sub-



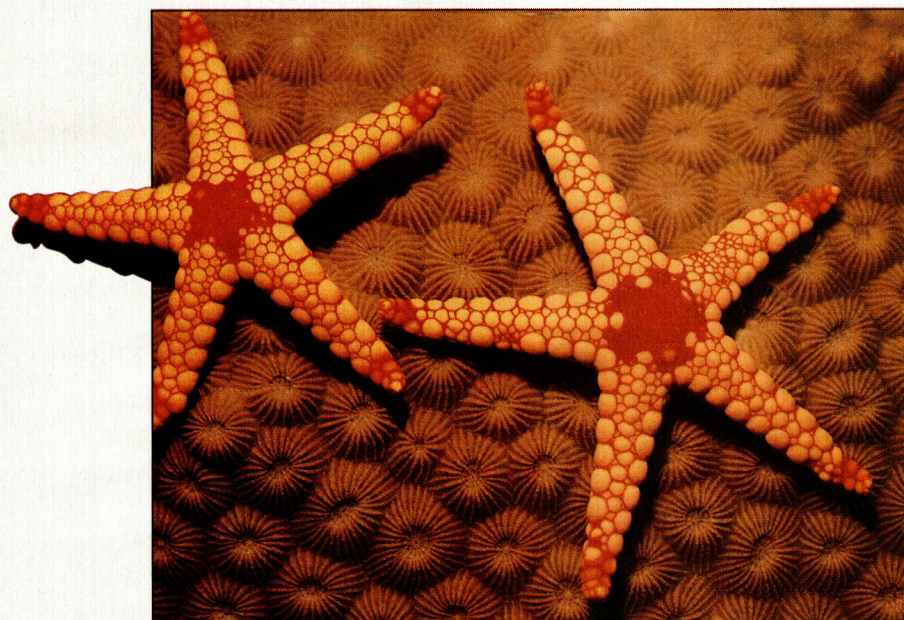
Even a school of several different species of grunts—some with greater reflectance of light than others—will be exposed accurately through the magic of TTL.



When shooting macro or close-up photos, choose f/22 to maximize depth of field and move the strobe within 6 to 12 inches of your subject. Left: A Squirrelfish.

posure process. In these situations, choose f/22 to maximize depth of field and move your strobe within 6 to 12 inches. Be sure the ready light does not blink after firing the shutter. If it does, the flash has output its maximum power and you may obtain an underexposure. To remedy this possible problem simply move the flash closer until the ready light ceases to blink after the shutter is released.

You can also depend upon TTL when using a standard 35 or 28mm lens for fish pictures. In these situations, simply make sure the subject fills at least 50 percent of the frame and set the aperture according to the ISO and depth of field considerations previously recommended. Move in close and shoot at a slight upward angle. You will obtain accurate TTL flash exposure on your subject against a pleasant blue background. When shooting these pictures, the selection of a subject can be the best way to ensure proper TTL exposure. Choose a subject such as a grouper, parrotfish or other relatively large fish that can fill the



When the photo subjects are on the same plane—such as in this macro photo of starfish on coral (left)—TTL is extremely accurate.

Since there was very little ambient light, this photo of a Tinker's Butterflyfish (right) was exposed entirely with light from the strobe.

ject will be properly exposed by artificial light, which is controlled by the camera's TTL function.

The degree of TTL exposure accuracy is very high when shooting macro and close-up photographs. This is because the exposure is entirely dependent upon artificial light there is no element of ambient light in the ex-



Right: To ensure getting the shot, experienced photographers bracket. To do this when using TTL it is necessary to change the film speed on the camera's ISO dial.

frame from a working distance of about three feet.

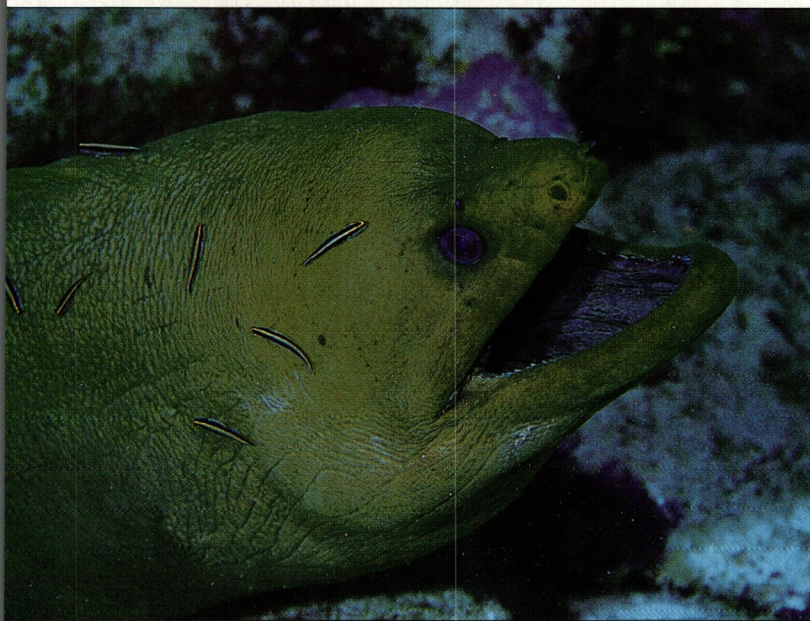
AUTO COMPENSATION: The magic of TTL means that no matter what aperture or ISO film you choose, your exposures will be consistently precise. It also means TTL will compensate for variable water conditions that can affect the transmission of light. It won't matter if you are shooting in 200 foot visibility in the Caribbean or five feet of visibility in a Midwest lake, TTL will accurately measure the total amount of light that actually reaches the film and control the



The magic of TTL means that no matter what aperture or ISO film you choose, your exposures will be consistently precise. It also means TTL will compensate for variable water conditions that can affect light transmission.

slower speed film and will cause the strobe to burn longer, resulting in a one stop overexposure. Next, set the ISO to 200. This will cause the camera to quench the strobe faster, producing a one stop underexposure.

LIMITATIONS OF TTL: TTL is not absolutely foolproof. But for the most part, when shooting macro, close-up, or fish pictures with a subject that occupies 50 percent or more of the frame, TTL is recommended. When you are shooting a subject that fills less than 50 percent of the frame and there is an abundance of blue water in the background, the TTL function of the camera can be fooled. When you encounter these situations, switch to manual exposure or assume the TTL function will use the full power output of the electronic strobe. In another article in this magazine, you will find a discussion of advanced exposure control using manual methods. 📷



strobe output. TTL also deals well with supplementary lens attachments such as extension tubes or close-up diopters, filters or wide angle diffusers. In manual exposure conditions, these factors would normally cause a subjective compensation to be considered.

BRACKETING: There is one way to outsmart TTL and create different exposures. The intentional deviation from the technically correct exposure, resulting in over and underexposure, is known as bracketing. If you

were shooting in manual exposure control, we would simply advise you to change your aperture. Bracketing around f/8 means shooting the same scene at f/5.6, f/8 and f/11. But, as you have learned, TTL automatically compensates for different apertures. Instead, change the camera's ISO setting, thereby fooling the camera into thinking it is loaded with a different film. If you are shooting an ISO 100 film, setting the dial at ISO 50 will fool the camera into thinking it has a

CONTROLLING LIGHT

using
ambient and
artificial light.
creatively



The single most important technical aspect of U/W photography is exposure control. U/W light is comprised of two very distinct components; natural light and artificial light. Each of these should be thought of as an independent factor that will be used in some type of balance to expose the film.

Natural light, commonly referred to as ambient light, is provided by the sun penetrating the water. Ambient light is responsible for background exposure. Ambient light has very little or no effect on subject or foreground exposure, except near the surface.

Artificial light is light generat-

ed by a flash or strobe. Its main purpose is to restore the vivid colors lost at depth because of selective absorption of the sunlight. Artificial light has no effect on backgrounds and its effective foreground use is limited to about six feet.

AMBIENT LIGHT: HOW TO USE THE CAMERA'S LIGHTMETER. When using flash with a Nikonos V, the avail-

Top: Strobe light brings out the bright colors of a Fiji reef. Inset: The lenses, strobes and accessories of the Nikonos line. Left: Close to the surface on a sunny day there is plenty of ambient light and a strobe is not needed.

able shutter speeds are 1/90 second (with the camera set on A), 1/60 second and 1/30 second. In most situations, you will want the fastest shutter speed possible (A), so you can "freeze" moving subjects or prevent image blur caused by camera movement. Shooting at 1/60 and 1/30 second is useful when you are in deeper water, where ambient light is low and a slower shutter speed will help brighten the background.

Lens apertures are referred to in f/stops, a numerical representation that indicates how wide the lens will open upon exposure. F/22 is the smallest aperture, allowing the least amount of light to pass through the lens, and f/2.5 is the largest aperture (on the 35mm lens), allowing the most amount of light through the lens. Each change in aperture results in a doubling or halving of the total amount of light passing through the lens.

Right: With the ample ambient light found near the surface on a sunny day, a strobe can be used merely to provide fill light, adding color and detail to the snorkelers' bodies and equipment.



Above and left: Silhouettes are taken using ambient light only. Lightmeter readings should be taken on the bluewater background, not with the meter pointing toward the surface.



Choosing an aperture in conjunction with the shutter speed in use produces the overall exposure. The question is, which aperture is the right one?

Observe the LED numbers in the lower area of the viewfinder. These tell you which shutter speed to use at the aperture setting. If, for example, the aperture is f/8 and 60 is blinking in the finder, the proper shutter speed is 1/60 second. If 1/60 is not your desired shutter speed, you must choose a different aperture. As an example, let's say you want to use 1/30 second but, when you look through the viewfinder, you see the lightmeter is sug-

gesting 1/60 second with your aperture set at f/8. This indicates your chosen combination of shutter speed and aperture will produce an exposure that is too bright. You should change your shutter speed to f/11, thereby making 1/30 second the correct shutter speed for that exposure.

One consideration when choosing an aperture is depth of field. This refers to the area in front of and behind the plane of focus that will remain acceptably sharp. Smaller apertures produce greater depth of field and are beneficial in keeping your subject sharply focused. An aperture range of f/5.6 to f/11 is recommended. If the lightmeter suggest an aperture larger than f/5.6 you should probably adjust your shutter speed to accommodate a smaller aperture. This is a very important consideration since focusing is accomplished through estimating the subject distance and sometimes involves a moving subject. Greater depth of field provides a margin for error that often makes the difference in getting a sharp photo.

One of the most important techniques in determining ambient light exposure is proper aiming of the camera's lightmeter. Aiming directly at your intended subject will actually

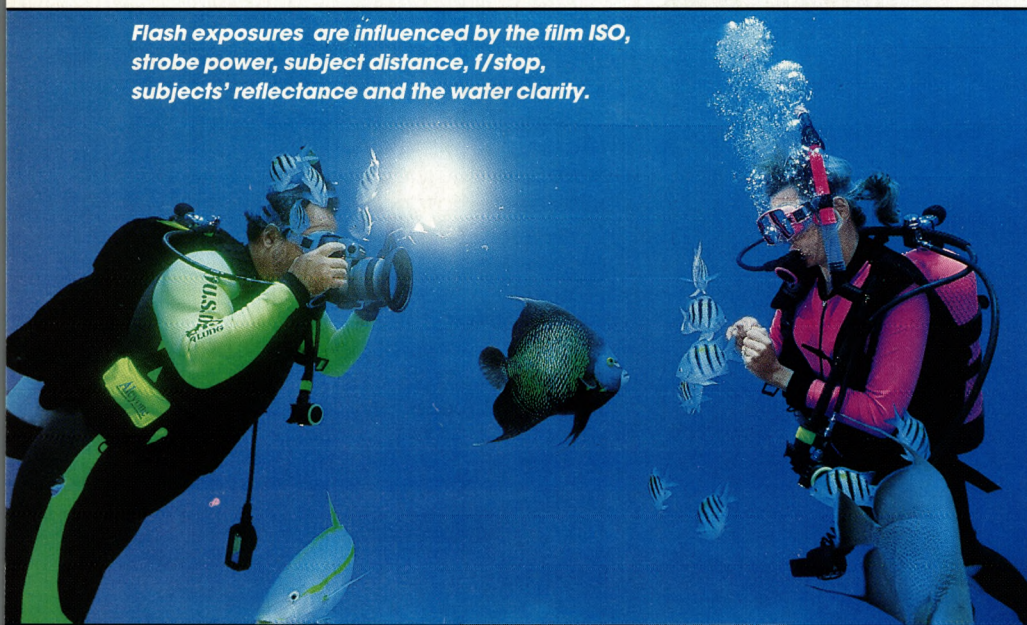
overexpose the background and possibly even the foreground. This is because there is very little reflected ambient light reaching the subject. Instead, you must remember that ambient lightmeter readings are to determine the background. This may mean choosing a spot in the water that looks like the color and brightness you want to create and taking your reading from this area. This reading will be a reference for exposure settings. After making these settings, recompose and shoot.

ARTIFICIAL LIGHT: APPLYING THE STROBE. The factors affecting correct flash exposure include the film speed or ISO, the power of the electronic flash, the subject distance, the lens aperture, the subject's reflectance and the water clarity. Some of these can be considered through calculation with a mathematical formula, while others are subjective and will require an adjustment or compensation to your calculations. If this sounds too unscientific and non-exacting, as well as too much bother, we have a solution. All of the required factors involved in the determination of artificial light exposures can be performed electronically by the camera through a feature known as TTL auto flash exposure.

Through the Lens (TTL) auto exposure employs a light sensing cell adjacent to the film plane and measures the exact amount of light that passes through the camera's lens to strike the film. It automatically takes into account all the factors and conditions affecting flash exposure and takes the



Flash exposures are influenced by the film ISO, strobe power, subject distance, f/stop, subjects' reflectance and the water clarity.



calculating and guesswork out of the process. When it senses the right amount of light, it turns the electronic flash off. If you are working with different film speeds, you simply adjust the ISO control dial and the camera will control the flash according to the speed of the film you are using. If you are working in dark water, the Nikonos V will compensate by allowing the flash to emit more light for the exposure.

BLENDING AMBIENT AND FLASH EXPOSURES: When using TTL for easy foreground exposures, you must

still pay attention to ambient light considerations. Remember, the Nikonos V has no ability to control the amount of natural light in the background. For example, if you have set your aperture at $f/5.6$, the foreground flash exposure will be correct, thanks to TTL, but the amount of natural light in the background may be abundant, calling for an $f/16$ exposure. This would result in a three stop overexposure and blowout in the background. Therefore, if you consider the background ambient light first and make the proper aperture setting based on the lightmeter reading, the camera's TTL function will provide the right amount of foreground fill flash for a balanced overall exposure.

You can creatively control your exposures by varying your

want to open up your background by shooting at $f/5.6$. In either of these examples, you should remember that the TTL function exposes the foreground with the correct amount of artificial light.

EXPOSURE LIMITATIONS: TTL auto flash exposure is a terrific technological improvement and has resulted in many new photographers obtaining the right exposure on their very first photo dives. However, it should be noted that TTL is not foolproof. Under the following two conditions TTL may not produce ideal exposures.

If a subject is extremely reflective, such as a Barracuda or Tarpon, the camera may think it is receiving more light than is actually needed. This may result in less artificial light being generat-



flected back to the camera for proper measurement. Consequently, the camera thinks it has only put out a small amount of light and its solution is to put out more. This will result in foreground overexposure. To work effectively in this situation, you simply need to assume the flash will put out full power and to use smaller lens apertures that will be correct for the increased amount of flash. The background could be affected but your subject will be more accurately exposed.

SUMMARY: When shooting TTL in macro and close-up, there is no ambient light, so TTL is very accurate. When using standard lenses to photograph schools of fish or tight shots of divers and reef with a small amount of background light, TTL is also very accurate and you should simply make your settings with the background ambient light considerations. When shooting wide angle, if your main subject and supporting foreground do not occupy at least 50 percent of the frame, you should consider using exposure compensation or smaller apertures as described.

By following these few rules, you will get great exposures right away with TTL. Why concentrate on theoretical math calculations when you can enjoy the dive, find interesting subjects and let the camera's technology do the rest? 📷



TTL is very accurate when used with a standard lens for a head and shoulders portrait of a diver or large shark. It automatically takes into account all the factors and conditions affecting flash exposure.

ambient light settings slightly, thereby making the background lighter or darker as you desire and still maintaining correct flash exposure on your main subject. As an example, if the lightmeter indicates you should use an $f/8$ aperture and, instead, you shoot at $f/11$, the background will be technically one stop underexposed. But you may want this to give greater emphasis to your subject with more color saturation. Or perhaps it is important to highlight a subject farther away from the camera. In this case you may

ed and an underexposed subject. If you encounter this situation you can use exposure compensation by setting the camera's ISO to a lower number. This will fool the camera into thinking it needs more light and will offset the incorrect reading from an extremely reflective subject.

Another problematic situation for TTL occurs when the subject is small in the frame and the ambient light is more important in the overall exposure than flash. When this happens, most of the light emitted from the flash passes the subject and is never re-

WIDE ANGLE PHOTOGRAPHY

15mm, 20mm and Aqualens for stunning “big picture” shots!



The Nikonos V with 15mm lens (shown above), the 20mm or the Aqualens is used to photograph large subjects as well as produce stunning close-focus wide angle pictures (top).

For the professional U/W photographer, wide angle is the format of commerce. If you want to capture the essence of a coral reef, the ideal lenses for the Nikonos V are the 15mm, 20mm and Aqualens.

In order to minimize the water column and thereby enhance color and resolution, large subjects must be photographed from a near vantage via a wide angle lens. The kinds of images best suited to these wide angle lenses are broad underwater panoramas, schooling fish, large marine life, divers (either as portraits or as an element of composition in a reefscape) and even some smaller subjects via a technique known as close-focus wide angle.

ANGLE OF COVERAGE: The 15mm lens covers 94 degrees; the 20mm offers 78. Both lenses offer matched optical viewfinders to simulate the lens' angle of view.

This is necessary because the camera's built-in viewfinder is accurate only with either the 35 or 28mm standard lens. The angle of view of the Aqualens depends upon the topside lens used within.

The Aqualens is essentially a clever housing that adapts topside wide angle lenses for use on the traditional Nikonos body. There is a dome port (a choice of either six or eight inch) that attaches via an O-ring seal to an anodized aluminum base. The base contains a standard Nikon bayonet mount, as well as focus and aperture controls manipulated via gears, such as on an Aquatica SLR housing. The whole assembly then mounts on the Nikonos as would a conventional underwater lens, except that a shoe mounted retaining pin has been added to enhance stability. Since the Nikonos does not offer reflex viewing, the Aqualens also offers a parallax corrected companion optical glass view-



Artful application of strobe light accents color in the foreground of a wide angle photo and makes the primary subject stand out from a field of blue. A diver silhouetted in the background (right) adds drama.

finder with a variety of masks to adapt it to five different wide angle lenses. I most often use my Aqualens with either the 16mm full frame fisheye (180 degrees coverage) or the 18mm (100 degrees coverage).

LIGHT IN WIDE ANGLE PHOTOGRAPHY: The technical aspects of underwater photography are most concerned with focus and exposure. With wide angle work the depth of field is so great focus is a less critical consideration. This is not to say focus is irrelevant but it is a far more forgiving consideration than with any other form of underwater photography. Exposure, on the other hand, is more exacting.

Whereas exposure with macro and close-up photography are almost entirely strobe dependent, effective wide angle depends almost equally on both strobe and ambient light. The strobe needs to offer a beam spread wide enough to cover the lens in use. This is often accomplished by means of a diffuser, as on the SB 103 and SB 105 strobes. The diffuser spreads the beam of light but reduces the light striking the subject by about one stop. The SB 104 offers 100 degree coverage without a diffuser and will therefore cover

the 15mm lens with beam spread to spare.

As with any kind of underwater photography, artful application of strobe light will accent the color in the foreground and make the primary subject stand out from a field of blue. But, with wide angle work, the background is also an important compositional element comprised of a dramatic slope of a wall, the brilliant tropical sunburst or a diver silhouette.

There are four basic types of wide angle photos, each with different light, focus and compositional considerations: ambient wide angle, reef scenics, diver portraits and close-focus wide angle.

AMBIENT WIDE ANGLE: This is the available light shot for subjects either too large or too far away to light with the strobe where pure silhouette is preferred; in turbid water where backscatter would be a problem; or in water so shallow strobe fill is not mandatory. I find this an effective tool to capture the magnitude of a shipwreck, shallow water snorkeling shots and large marine life near the surface (such as whales or manatees). When shooting silhouettes, I find that subjects with strong graphic

shapes work best and that the sunburst can be a critical compositional element.

Since no strobe is used in this type of work, the lightmeter will be crucial to exposure determination. The Nikonos V meter integrates a center-weighted through the lens (TTL) sensor that is quite accurate in most available light situations. With the camera set on A, simply choose an aperture and the camera will seek the appropriate shutter speed in stepless increments between 1/30 and 1/1000 second. The shutter speed chosen will be indicated in the camera's LED readout in the viewfinder. (Note, however, that if the strobe is attached and on, the A setting is restricted to 1/90 second and available light automatic exposure is not possible.)

REEF SCENICS/LARGE MARINE LIFE:

The colorful reef scenic, schooling and large fish and marine mammals are popular shots ideally executed with the Nikonos 15 or 20mm lens. If the reef panorama is taken from more than five feet away, the colorful detail enhanced by the strobe is lost, so once again the wide angle lens is necessary. Each lens, the 20, 15 and Aqualens, do certain things very well and, ideally,

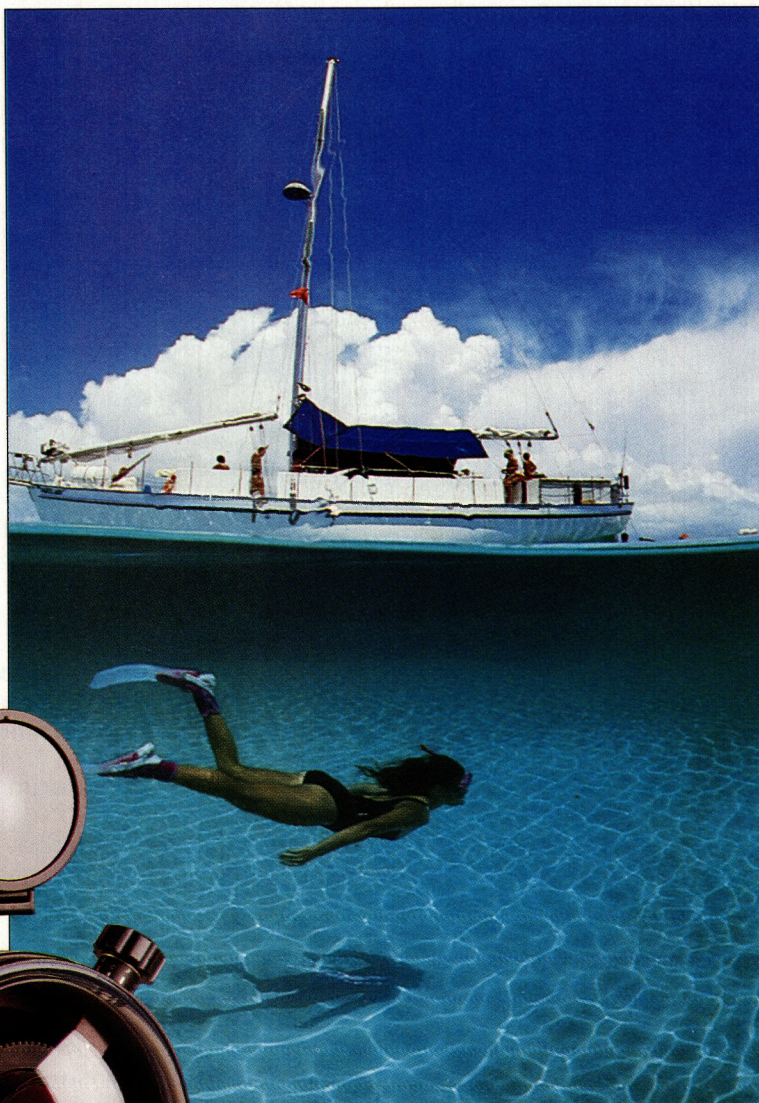
the photographer will be equipped with whatever tool is necessary.

DIVER PORTRAITS: Divers can be an interesting element of the composition in wide angle work, both to give a sense of scale and to create a sensation of being there. The U/W environment is alien to many viewers. Placing a diver within the frame makes the image psychologically more accessible, allowing the viewers to relate.

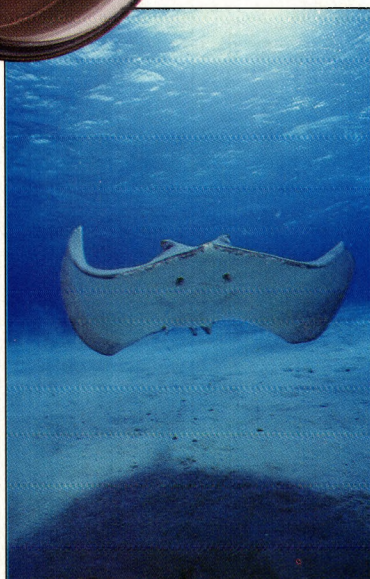
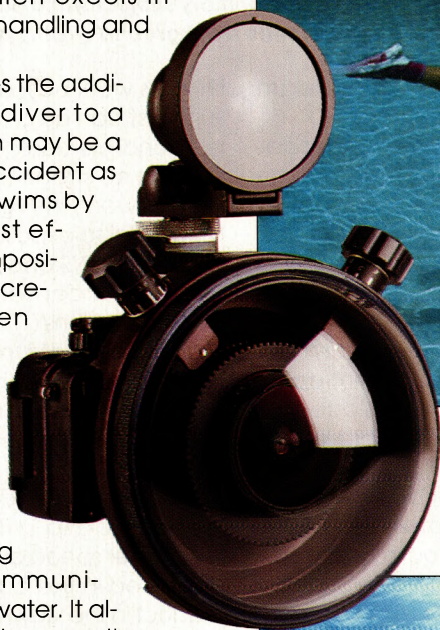
The Nikonos 20mm lens allows excellent head and shoulder shots of divers, but the Nikonos 15 is the single most popular optic for diver portraits. Its tremendous depth of field, beautiful contrast and incredible resolution are perfect complements to a camera such as the Nikonos V, which excels in ergonomic handling and ease of use.

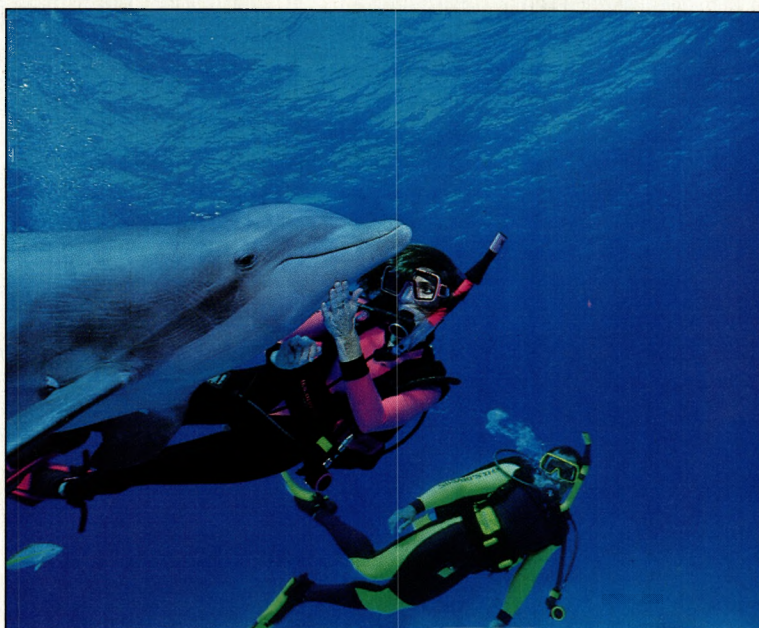
Sometimes the addition of the diver to a composition may be a fortuitous accident as someone swims by but the most effective compositions will be created when diver and photographer work together, planning the shots topside and being able to communicate underwater. It also helps to have a dive model skilled in buoyancy control and attired in tasteful, colorful scuba gear. While it is important to get the shot underwater, it is equally important for photographer and model to review the work on the light table following the shoot if the collaboration is to continue. Having the model understand the limita-

Large animals such as the Southern Stingray (right) and schooling fish (Barracuda and jacks, far right) are ideally photographed with the Nikonos 15 or 20 mm lens.



The Aqualens (left) can be used for unique split-level shots (above) not possible with any other Nikonos lens. This device is essentially a housing that adapts topside wide angle lenses for use with a Nikonos.





Diver and marine life interaction shots are best photographed with a wide angle lens. The divers and Bottlenose Dolphin (above) was shot with a Nikon 16mm fisheye lens in an Aqualens housing. The diver and swarms of Silversides (below) was shot using a Nikonos 15mm lens.



tions and potential of the underwater photo is crucial. If the photographer can enhance nonverbal communication for future shoots, productivity will increase dramatically.

CLOSE-FOCUS WIDE ANGLE: This is a technique long practiced by underwater photographers but perhaps first and best explained by Howard Hall in his 1982 *Guide to Successful Underwater Photography*. In his words, "Close focus wide angle (CFWA) are perhaps the most beautiful type of photograph that can be taken underwater. The result is the beautifully rich colors of macro, combined with the expansiveness of wide angle available light and silhouette photography. . .the idea is to take advantage of the extreme depth of field which wide angle lenses are capable of. For example, the 15mm Nikonos lens has a depth of field of from one foot to nearly infinity when set at f/16. It is therefore possible to get an average sized starfish nicely framed in the foreground with a diver swimming through a kelp forest in the background, all in focus at the same time."

There are two tricks to this type of imaging with a Nikonos V—balancing exposure and parallax correction. When using small apertures to enhance depth of field and account for minimal strobe to subject distances I often use a slow shutter speed, such as 1/30 of a second, to open up the detail in the ambient light background. Because the viewfinders for the Nikonos 15 and 20mm lenses are accurate at distances of about 2.5 feet and beyond, up close the viewfinder does not see the same image as the lens (parallax). To compensate, I use the viewfinder to compose the scene but when it comes time to shoot, I move the camera so the lens is where the viewfinder was a moment before and shoot. This technique takes some practice but can be very helpful to correct for parallax, even if the back of the camera blocks the view at the precise moment of exposure. 📷

ADVANCED EXPOSURE TECHNIQUES

beyond TTL to creative lighting

TTL creates a huge fudge factor, thus subtle errors in distance estimation can still yield perfectly acceptable results. In fact, the Nikonos V and SB 105 strobe can be almost point and shoot simple. Creative underwater photography, however, goes way beyond point and shoot; advanced exposure techniques are crucial.

WHAT TO EXPECT FROM TTL:

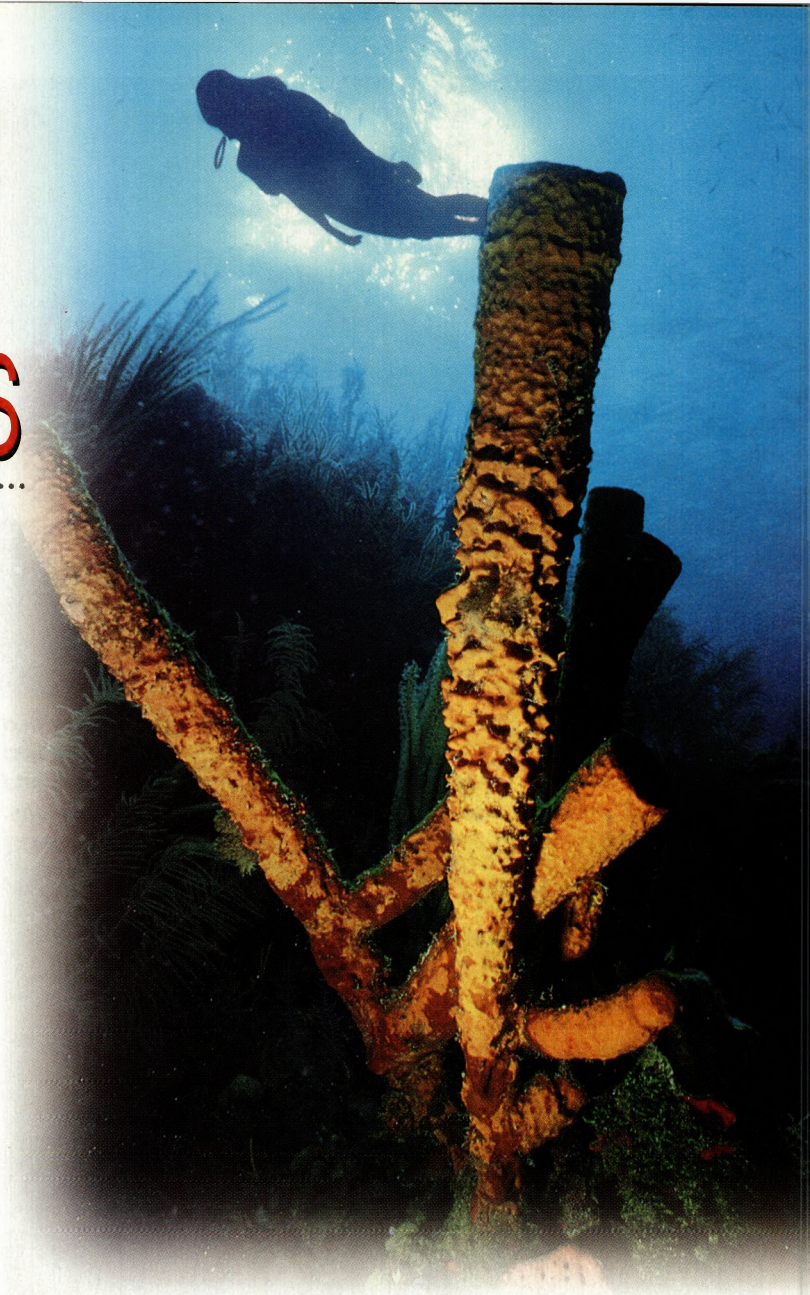
Through the lens metering is quite accurate for certain imaging parameters. It is terrific if there is about 65 percent or more of the primary subject reflecting light back to the sensor. This is why macro and close-up are typically incredibly accurate in TTL. The average kind of shot features a primary subject that occupies a large part of the frame with a background nearly on the same plane, likewise reflecting light back to the sensor. Conversely, this is why TTL with wide angle does not always work. The composition frequently includes a small area of strobe

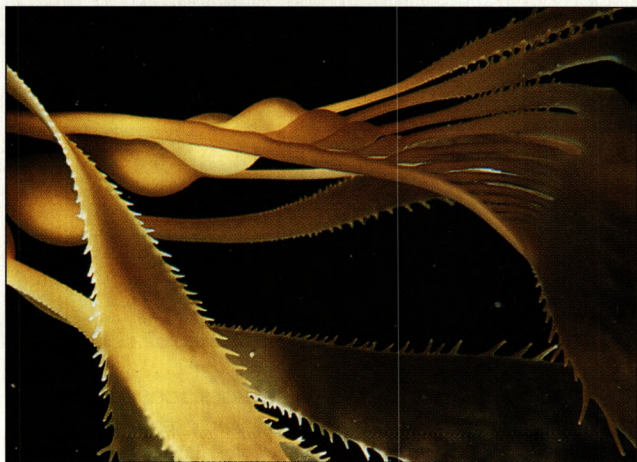
Blending strobe and ambient light can be tricky. In this close-focus wide angle photo, the foreground subject—the sponge—is well lit yet there is still detail in the background and the water is bright blue.

illuminated foreground surrounded by an expansive field of blue water. In this case, with minimal reflectance back to the sensor, the strobe assumes it should dump more and more light. Often full power will discharge. If the aperture chosen is right for full power, all is well. But if the aperture is wider, assuming the light reflected back will quench the strobe, overexposure will result. TTL systems work in a very predictive fashion and

once you know what works and what generally doesn't, your exposures will improve.

To know specifics about your system, whether a Nikonos V, Nikonos RS or housed camera, you should first do an exposure test in both manual and TTL modes. Choose a standard film, let's say ISO 100, and preferably use slide film so the exposure latitude is narrow enough to accurately show changes. Kneel in the sand three feet from a





subject of average reflectance that won't swim away and do two tests as follows:

Test #1: Set the camera on M (for mechanical 1/90 second) and the strobe on full power. Shoot four exposures, one each at f/5.6, f/8, f/11 and f/16. Make sure the strobe is fully recycled and make sure the distance to the subject remains the same.

Test #2: Set the camera on A (for automatic, also 1/90 second when the strobe is turned on) and the strobe on TTL. Shoot four exposures, one each at f/5.6, f/8, f/11 and f/16. Again, it is crucial the strobe is fully recycled and distance does not vary or the test becomes invalid. Have the slide film processed but not mounted.

Examining this film strip on the light box tells us two things. First, it indicates what the proper setting is for full power three feet away. This is important because if you are forced to shoot manual, you know the starting point.

Once the correct exposure for three feet is known, it is about one stop less for two feet; one stop more for four feet. Perhaps more importantly, it lets you know what aperture you should use at what I call the *Upper Limit of TTL*. If you are shooting a small subject in a wide field of open water and know from experience that in TTL the strobe will likely dump full power, you can then choose the proper f/stop to compensate.

The second part of the test shows the *TTL Coupling Range*. Examining the apertures from f/5.6 to f/16 shot on automatic will probably indicate that f/5.6 and wider will most likely be overexposed and f/16 will be too dark. The underexposure is easy to figure because it was also dark at f/16 on the full power test. Once the strobe dumps full power, there is no more regardless of whether the settings are manual or TTL. At wider apertures and near distances

Clockwise from top left: The Backlit Fire Coral, a nudibranch, Giant Kelp and a goby on a gorgonian were all shot using TTL. This exposure mode works best when the primary subject and the background are nearly on the same plane.

the strobe may not have time to quench. The test will probably show that the best exposures are in the range of f/8 to f/11 for ISO 100 film.

BLENDING STROBE AND AMBIENT LIGHT: In any daylight photograph, both ambient light and strobe light contribute to the exposure. Choosing the aperture best suited to the more powerful of the two will give a proper exposure. However, balancing them can enhance the creativity of the photograph.

The strobe value is a function of strobe to subject distance (STS), subject reflectivity and strobe power. This latter may be moderated by auto exposure considerations but, as our test indicated, there will be a fairly



narrow range of acceptable aperture settings for the specific distance chosen. Consider this the *independent variable*.

The *dependent variable* is the amount of ambient light striking the scene. This changes as a function of depth, time of day, surface conditions, water translucence and cloud cover. Your camera's lightmeter shows how much ambient light is falling on the scene but it is also useful to keep the Sunny 16 rule in mind to evaluate the level of ambient light.

The Sunny 16 rule for topside photography postulates that, for a front-lit subject in bright

sun during the mid-part of the day, a proper exposure at $f/16$ will be rendered by a shutter speed that is the reciprocal of the film ISO. For ISO 100 film, it would be $f/16$ at $1/100$ of a second (or the nearest applicable shutter speed such as $1/90$). For underwater photography, Sunny 16 varies because light is absorbed as a function of depth. At 10 feet it is more like $f/11$, at 20 feet $f/8$ and by 30 feet deep the light has probably dropped to about $f/5.6$. Let's see how this variable of ambient light can affect the choice of shutter speed and aperture in under-

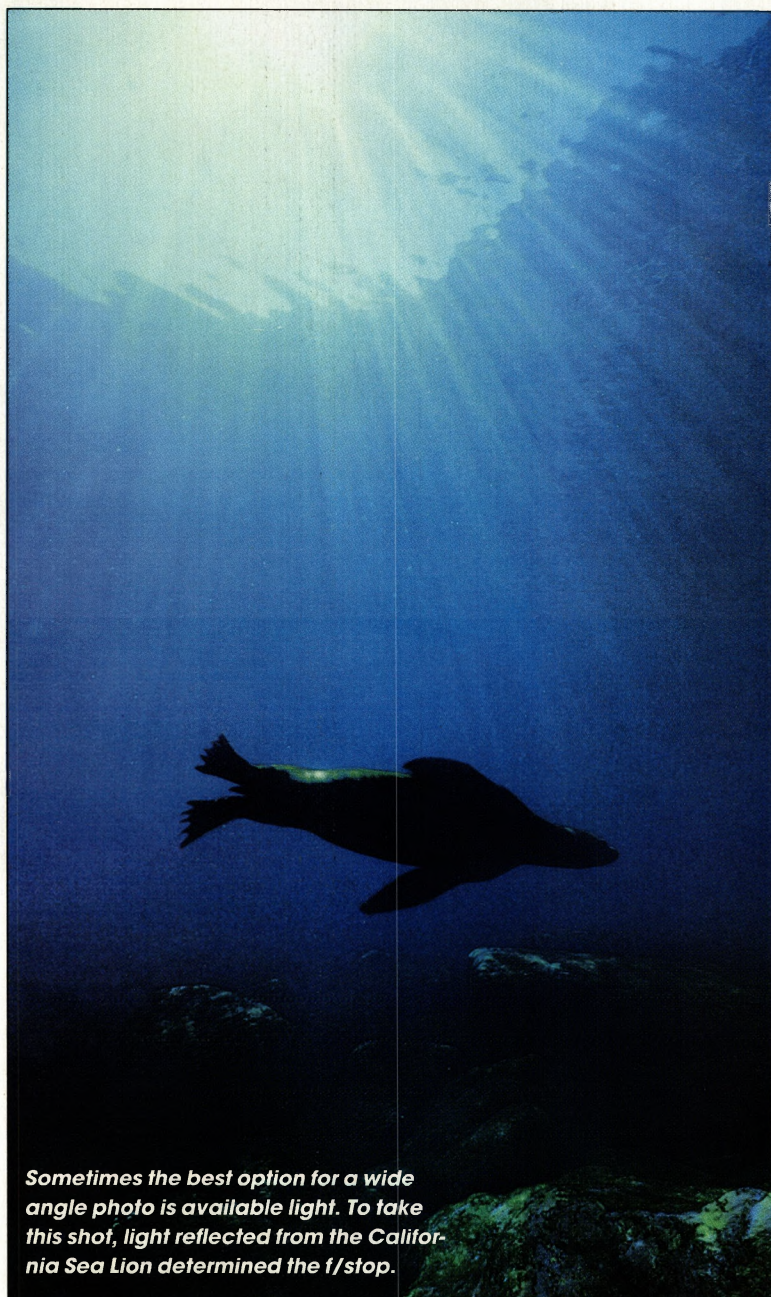
water photography:

Assume you are photographing a subject three feet away and your TTL test indicates an aperture of $f/8$ is right for the strobe value. The camera is set on A, which is $1/90$ of a second if the strobe is turned on. What happens if it is mid-day and you are ten feet deep? The STS exposure is $f/8$, yet the ambient exposure is $f/11$. Therefore, choosing the smaller aperture, $f/11$, will give the correct exposure and the strobe becomes fill illumination. Now you are 30 feet deep but still three feet from your subject. The strobe lit foreground subject still calls for $f/8$ but the



Different photo opportunities require different lighting.

Above: A single strobe highlighted the Great White Shark's most impressive feature, a mouth filled with large, sharp teeth. Far left: TTL was used for this shot of a tiny fish on a red gorgonian. Left: A single strobe was used to light both Chambered Nautiluses in this wide angle shot.



Sometimes the best option for a wide angle photo is available light. To take this shot, light reflected from the California Sea Lion determined the f/stop.

ambient background calls for f/5.6. Choosing the smaller aperture of the two, f/8, is the right choice. It is at this point that the creative photographer begins to explore options.

A one stop difference between foreground (strobe) and background (ambient) is generally quite acceptable. There is a rich blue background, which still yields perceptible detail. But, what if it is early or late in the day, cloudy or deep, and the meter reads f/2.8. In this case there is a three stop difference between the STS

value of f/8 and the background. Detail is lost and the water appears a dark blue, almost black. Here's where variable shutter speeds is a huge asset. Instead of staying at the A setting, try using 1/60 or even 1/30 of a second. The slower shutter speeds bring in more ambient light for the background. With my housed cameras and Nikonos RS, I will sometimes drop to 1/15 of a second or even 1/8 to open those available light backgrounds.

MULTIPLE STROBES: A second strobe is often used to enhance

wide angle coverage, to increase the light so a smaller aperture can be used (thereby extending depth of field) and to fill the harsh shadows left by a single strobe. The second flash can trigger by means of a double sync cord, which allows for TTL, or by means of an internal slave sensor. A double TTL cord takes much of the guesswork out of multiple strobe exposures but even for manual exposure it is fairly straightforward.

The theory for estimating multiple strobes exposure is as follows: First *determine exposure for a single strobe by dividing the rated guide number by the distance to yield aperture.* For example, an SB 105 with an underwater guide number of 33 for ISO 100 film would give f/11 at 3 feet (33 divided by 3 = 11). *When using a second light source of equal power, aimed at precisely the same point, the new guide number is equal to the square root of the guide number of the first strobe plus that of the second strobe squared.* Do that one in your head while trying to shoot a Barracuda at a cleaning station!

Actually it works out as well to multiply the original guide number by 1.4 to figure the new guide number for two strobes. Therefore, for our SB 105 example the new guide number for ISO 100 film is 46.2 and the aperture at 3 feet is 46.2 divided by 3 = 15.4, close enough to f/16 for most film exposure latitude.

The wild card is that this calculation requires the second strobe to be aimed precisely at the same point as the first strobe. Then the light is incremental and quantifiable. However, the second strobe usually extends the width of coverage instead of purely overlapping. In that case, an exposure compensation of one-half stop is more reasonable. Actually, I often use my SB 105 on one-quarter power manual and it doesn't normally add to the exposure value at all but instead contributes a nice, subtle light to fill the shadows while retaining texture. 📷

THE MAGIC OF AN SLR

expanding
the
diversity
of your
photo
systems...

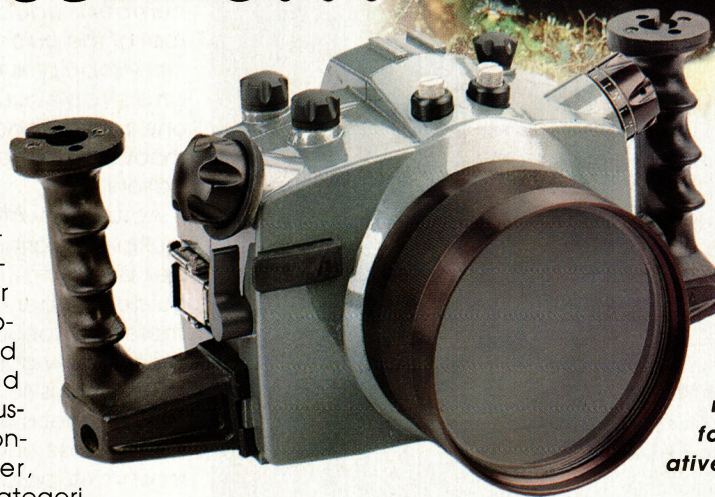
Some photographers think an SLR underwater camera is only for very serious photographers and that any good photographer uses an SLR. To conclude, however, that an SLR is categorically better than a Nikonos V for producing great underwater images couldn't be farther from the truth. In fact, an SLR is complementary to the Nikonos V. It doesn't produce better images, it produces different images.

One of the main reasons to shoot with an SLR is the lenses—micro, zoom and fisheye, to name a few—which are not available for the Nikonos. These lenses offer new and creative imaging possibilities. They also require additional skills and understanding for effective use.

BASIC PRINCIPLE OF AN SLR: REFLEX VIEWING. The single best

reason for using an SLR is its reflex viewing capabilities. It means the photographer doesn't have to imagine how the image will appear, it can be seen in the viewfinder. In addition to allowing the use of different lenses that produce different images, reflex viewing provides the ability to ensure critical focusing and creative composition. But, it is important to note that the entire advantage of this system is dependent on the quality and proper use of the viewfinder. There is no advantage to an SLR that does not have a superb optical finder.

For underwater use, the best viewfinder is an oversized model known as an Actionfinder. The Nikonos RS has an Actionfinder built into the camera body. Housed Nikon cameras have interchangeable heads that allow for the use of an accessory Actionfinder. An Actionfinder gives the photographer the largest screen possible in which to see and compose the image—important when wearing a facemask. It is also bright, for easy use in the dark underwater environment and delivers a sharp image to the eye for critical focusing.



Above: A Nikon N90s with 60mm micro lens in an Aquatica housing (left) was used to photograph this Longlure Frogfish with lure extended. The many lenses available for SLRs offer many creative imaging possibilities.

The next best thing to an Actionfinder is an optically designed viewfinder built into the back of the housing. In the case of the Aquatica 90, this optical finder is based on a two element design that makes full frame imaging possible. But, unlike other, simpler designs, it does not diminish the size of the image. A full image is helpful in framing, focusing and easy viewing of LCD exposure information.

USING THE VIEWFINDER: When a subject is in the sharpest possible focus it appears to jump off the film. Seeing the image in the viewfinder allows the photographer to place the plane of focus at the exact location where the highest degree of sharpness is desired. Because SLR lenses are capable of continuous focusing, more than one point can be considered. This is not possible with macro tubes on a Nikonos V, nor is it easy to estimate the exact plane of focus without reflex viewing. Practicing this technique in rough water or with

constantly moving subjects will try the patience of any photographer but once mastered, the results are sensational.

Creative composition is greatly enhanced by seeing the image and creating a variety of "looks" in the viewfinder. Moving in and out, left and right, up and down, while seeing the exact composition, is an invaluable asset. Again, using reflex lenses and their continuous focusing ability makes all the difference. Shooting the same subject at different reproduction ratios is simply a matter of moving in and out. Take advantage of this feature and your artistic eye will develop.

A developing eye for creative composition is essential for getting the most advantage from zoom lenses as well. Changing the lens's focal length setting will produce a different image size and location within the frame. It allows for inclusion or exclusion of additional elements.

Fisheye lenses offer an in-



What you see in the viewfinder of an SLR is what you get. This allows you to compose your pictures with precision. Above: A California Sea Lion fills the frame. Above right: Barracuda swirl in open water. Positioning the sunball in the upper left of this picture would be difficult without through the lens viewing. Right: This Spot-Banded Butterflyfish with brain coral was photographed in Papua New Guinea with a 60mm micro lens, which is perfect for capturing images of small, shy fish.





SLR cameras produce images not possible with a Nikonos. One of the main reasons for using an SLR is the lenses available. The Cuttlefish shown above and the starfish shown below were both photographed with SLR cameras, which offer great control of composition and depth of field.

credibly expansive view of the underwater world but require constant attention to manage the variety and placement of compositional elements in the frame. If this is not accomplished you will end up with a cluttered frame and possibly guessing at the main subject.

THE LENSES: Three workhorse macro lenses are frequently used with an SLR, all producing a 1:1 continuous focusing reproduction capability. The Nikkor 60mm f/2.8 (50mm f/2.8 with the Nikonos RS) can capture great I.D. shots of fish and other marine life on the reef. The 105mm lens is perhaps the most unique and is invaluable for capturing small and shy fish that will not normally allow you to get close. The 200mm is less frequently used but is a very creative tool, with a long focal length and life-size imaging. The advantage of the longer focal length lenses is the ability to obtain a 1:1 reproduction at farther working distances. This permits a dramatic image size on film while maintaining a working dis-

tance that will not frighten the subject. Each lens can be used with diopters and extension tubes for even greater macro capability.

The most frequently used wide angle lenses are the full frame 16 or 13mm fisheyes. With this extreme view, panorama reef shots are spectacular and great depth of field creates the sense of unending visibility. Since there are no real straight lines on a coral reef, the barrel effect common to these lenses is not detectable, making their use underwater ideal. Using these lenses requires special attention to what is happening in every corner of the frame. Also,



be careful not to let your strobe creep into the upper corners of the frame.

Extreme rectilinear lenses, such as the 15mm, f/3.5 Nikkor, with 110 degrees of view, and the 18mm, f/2.8 AF Nikkor, with a 100 degree view, widen creative imaging capabilities. To use these two lenses behind a dome port in a housing requires the use of an extension ring. This is to ensure the critical relationship between the nodal point of the lens and all points on the dome port are equidistant. If this distance relationship can be maintained, the image will remain sharp all the way to its edges.

Remember, it is imperative to shoot these wide angle lenses behind an eight inch dome port to obtain optimum sharpness. The dome also preserves the

SLR systems are also capable of using other lenses, such as the wide variety of zoom lenses available in the Nikon line. The 20 to 35mm, 24 to 50mm and 28 to 85mm are just a few options. For best imaging, some zoom lenses require the use of a flat port, others a dome. It should be noted that when a zoom lens is used with a dome port a virtual image is created at 12 to 16 inches and a diopter is usually required for sharp focusing.

OPERATION OF CONTROLS: In addition to the viewfinder, easy access and precision control of the camera is necessary. Viewfinder and top deck LCD panels must have illumination so you can see what settings have been made in dark water. Access to autofocus and manual focus controls allows you to work in all situa-

shutter release that will respond to your touch instantly will make the difference between good and great photography.

Obviously, the many features of an SLR require getting used to. Operation of all these controls in a weightless and moving environment, shooting moving and shy subjects, is a learning process. So, become creative and experimental in your approach to underwater photography. Learn how to and when to use the features that are at your fingertips. Using faster flash sync speeds, different meters or autobracketing with regularity will not only get you used to the many controls but will result in a new and different feel for the creative results of underwater photography. It will help make the magic come to life on film. 📷

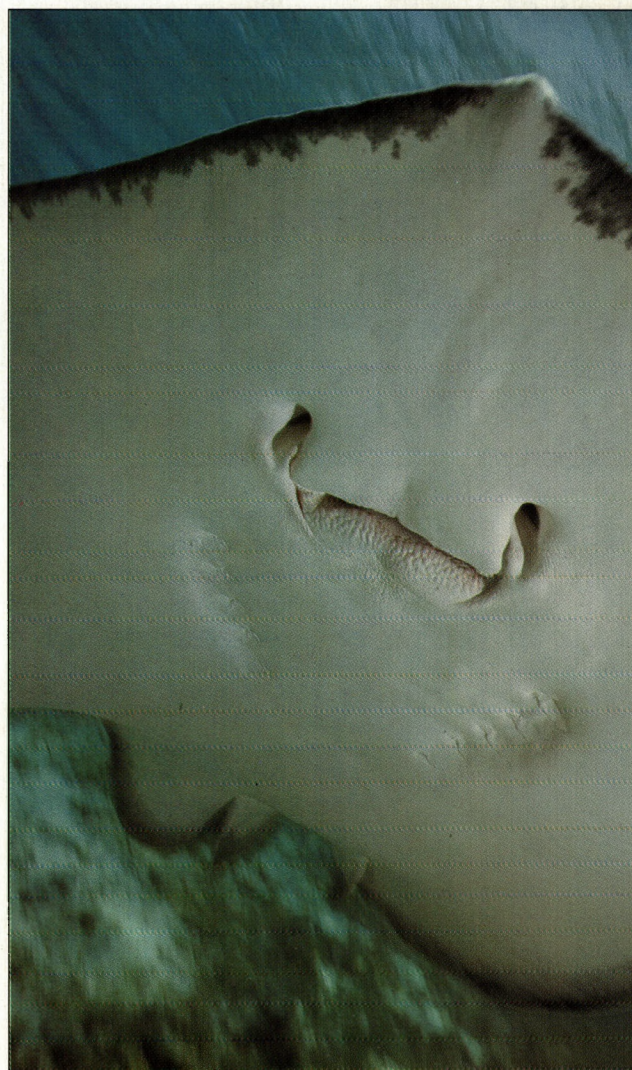


Longer focal length lenses permit dramatic image size on film while maintaining a working distance that will not frighten the subjects, such as this pair of juvenile Whitetip Reef Sharks (left). Below: A wide angle lens produced this dramatic shot of the mouth and underside of a fast moving Southern Stingray.

original angle of view of the lens, thus keeping it free from the effects of refraction, which would result in a diminished angle of view. This is a great advantage of a housed SLR.

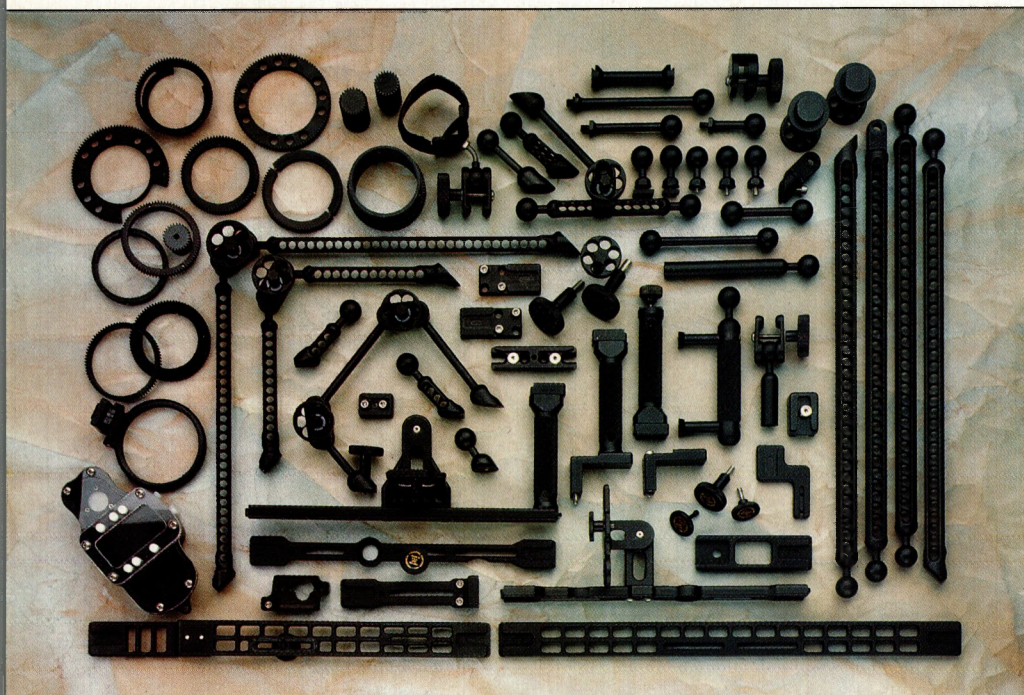
tions. And, all the manual controls must operate smoothly and precisely so exact settings can be made for optimum results. An exposure mode control is essential for addressing different photo opportunities and a control for selecting light meter options will be appreciated as the light is changing in the underwater environment.

Easy lens changing will give you the chance to respond to spontaneous situations and capture them on film with the creative tool of choice. And, a



COOL STUFF

accessories the take shot for you!



Remember when you first started taking pictures U/W? You were probably instructed to aim your flash slightly behind where you thought your subject was, to compensate for refraction which created an apparent image closer than the actual distance. This produced a consistent front lighting that was technically accurate. But then you noticed all of your images looked somewhat the same.

Advanced exposure control is a subtle technique. The ability to place the light on the subject's eye, or highlight the dorsal fin from the side, may only be a matter of moving your flash an inch or two. Capturing

Shown above are the myriad arms, brackets, camera trays and other accessories made by Aquatica for the Nikonos V system and housed SLR cameras.

a mood often means flash placement that reflects a change of an inch or two; a technique more exacting than changing apertures by even as little as one-half stop.

The tools you need to perfect this technique are universal balljoint arms with multiple sections. The ball allows you to create a robotic assistant, capable of moving in any direction. The multiple sections allow articulation at several locations,

for even further accuracy, as well as more options with greater flash to subject distance. Move the flash back and forth two inches at a time to ensure the capture of the many colors in the underwater world. Move the flash to the side to create an effective technique called rim lighting that will draw a viewer's eye to the highlighted details that you consider intriguing.

QUICK AND SPONTANEOUS REACTIONS: Owing to the movement of certain subjects, or their location, it may be necessary to remove the strobe and arm from the camera tray and hand hold it. It is often easier to move only the camera, through the quick turn of a wrist, providing it is easy to manipulate. In these situations, a quick-release function on your arm and tray accessories is very accommodating. It is also useful when it is physically impossible to maneuver both camera and strobe into the tight spot.

COMPOSITION: There will be times when you decide your subject requires a vertical rather than a horizontal composition. You now must turn the camera rig 90 degrees and reposition the strobe while maintaining the lighting angle. This process is even more tedious if you are using a double strobe rig.

If your camera and strobe arms are mounted on a flip tray, you will be able to simply press a button and turn only the camera. No repositioning of the strobe arms is required. Now, simply press the button on the back of the flip tray and turn the camera back to its original horizontal position.

USING MORE THAN ONE CAMERA: There are many times when you will want to use two or more cameras on a dive. Equipping your cameras and strobes with Aquatica TTL Wet Connectors will allow you to carry more than one camera (clip the second to a BC D-ring) without additional strobes. You simply unplug the strobe from the camera in use and re-plug it into the second camera.



Left: Shooting fast moving subjects such as California Sea Lions requires quick turning and repositioning of the camera. Special accessories—strobe arms and camera trays—can be a big help. Below: Dual strobe rigs need to be not only versatile but light weight.

Wet TTL Connectors come in single and double strobe configurations and can be permanently built into a housing or used in adapter form. The more units you use, the more cameras and imaging options you will be able to take diving.

AIMING THE LIGHT: With many things to think about U/W, there is no guarantee your strobe will be aimed at your subject. One of the best ways to overcome this problem is through the use of an aiming light, which can be positioned on the strobe head or strobe arm. The aiming light will have no effect on the exposure and can also double as a handy focus assist light.

Using one light for both functions is often possible but a second light, used just for focusing assist and mounted on the camera, is more convenient. This allows the aiming light to be dedicated only to the flash.

CREATIVE MULTIPLE LIGHTING: Using a second strobe to eliminate harsh shadows is especially effective in macro photography. When building this rig, versatility and light weight should be considered.

With the addition of a second flash you will be able to light your subject from more than one angle. You may even use different power settings on each strobe to create a lighting ratio. You also have the option of lighting a different element of the frame. A second strobe may also help light an

extreme wide angle scene.

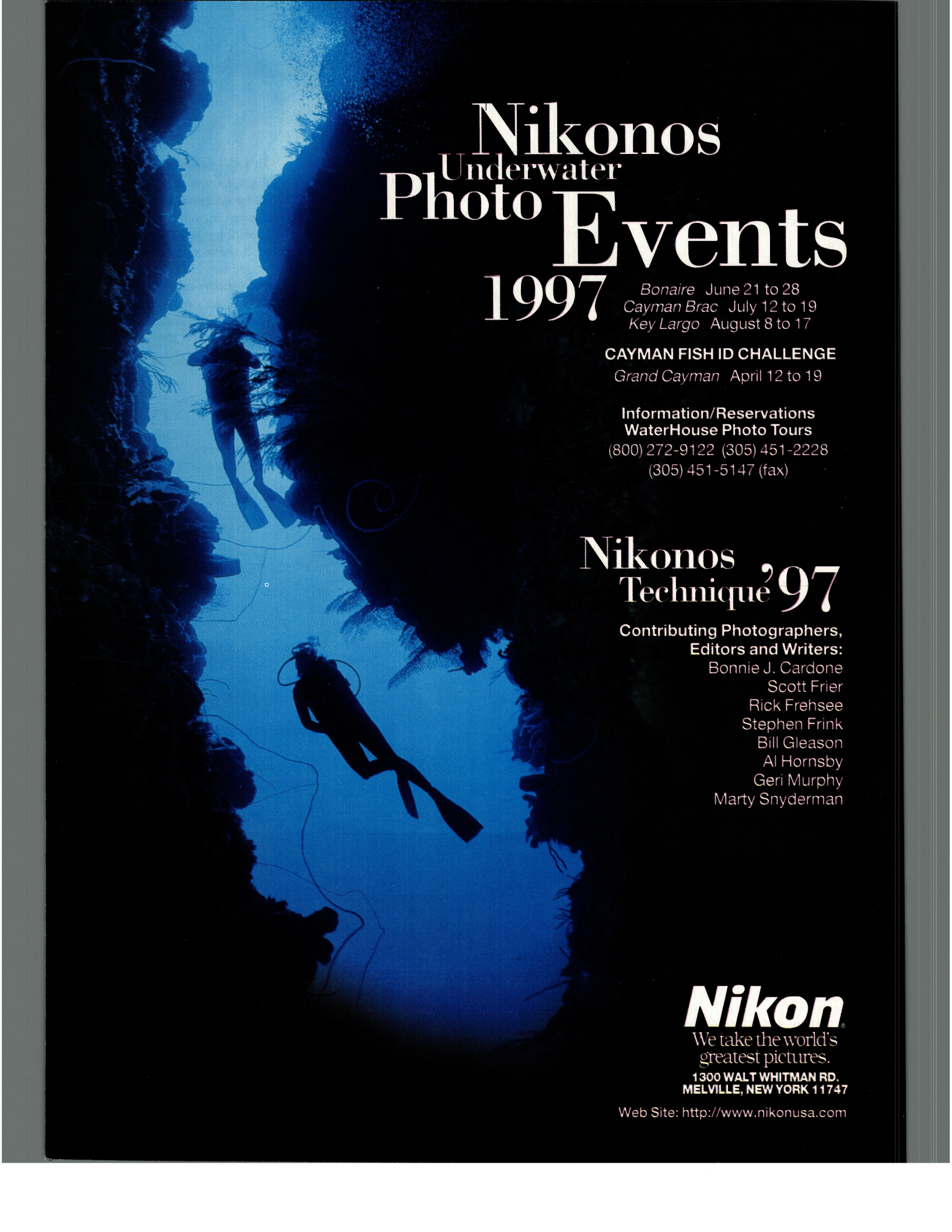
HANDLING: Once you have finished adding accessories that will help you work more efficiently, the addition of one or two handles will give you more control. These handles will slip easily in and out of the dovetails that are on the left and right sides of Aquatica trays. In fact, there is even a dovetail adapter that can be mounted on top of the handles for your strobe arms.

You can also add a dedicated tray to your SLR system.

SUMMARY: The two important considerations in choosing accessories is effective design and the quality of manufacturing. Aquatica accessories are strong and durable but light and compact. They begin with a piece of three-quarter inch solid aluminum stock, then are machined into a curved and hollowed out finished product that retains its strength but not unnecessary weight. Since these accessories are used in salt water, corrosion could become a problem. Aquatica products are hard anodized for insurance against this malady.

The design and quality of the Aquatica accessories provide the best solutions for addressing the photographic challenge. They are designed to work for you, not encumber you. 📷



A vertical underwater photograph showing two divers swimming through a narrow passage between large, dark coral reefs. The water is a deep blue, and the scene is backlit by light from above, creating a dramatic silhouette effect for the divers and the surrounding rock formations.

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DOMINICA

(Continued from Page 57)

and the western edge collapsed too deep for recreational diving. The pinnacles and canyons formed by these violent geologic forces provide ample substrate for coral and sponge colonization. Because they receive only a modest amount of visitation these reefs remain remarkably intact. Beautiful reefs, combined with warm water and outstanding visibility, complement a rich and fascinating population of reef residents. These are dive sites to savor and visit repeatedly to discover their subtle wonders.

DOMINICA TOPSIDE: As thrilling as the underwater scene might be, Dominica must be revered for its terrestrial delights. National parks and preserves dot the island and ecotourists trek here to experience sites such as Boeri Lake, a freshwater crater 3,000 feet above sealevel (a 45 minute hike); Emerald Pool, a scenic grotto only 10 minutes from the main road; and the strenuous three hour hike that winds through the Valley of Desolation and terminates at Boiling Lake, the second largest fumarole in the world. There are scores of waterfalls on the island but the most often visited is Trafalgar, just a short drive from the capital city of Roseau and a 15 minute hike from the road. The island is 29 miles long by 16 miles wide and rises to 4,747 feet at Morne Diablotin. In the Eastern Caribbean island chain known as the Lesser Antilles, Dominica is an incredibly verdant island and is geologically young and still potent.

HOW TO GET THERE: Dominica is admittedly a greater travel challenge than other Caribbean "direct-connect" destinations. Visitors from North America usually travel via Puerto Rico or smaller Caribbean islands such as Antigua, Barbados, Martinique, St. Lucia, St. Maarten or Guadeloupe. There are two airports on the island, Melville Hall and Canefield. American Eagle is the most popular international carrier and it lands at Melville Hall, a scenic two hour ride along winding roads from Roseau or Soufriere Bay. Canefield is a smaller airstrip served by carriers such as Cardinal Air from St. Martin and Antigua but is only five minutes from Roseau. However you get to Dominica, it is a very special destination and definitely worth the trip! 🍹

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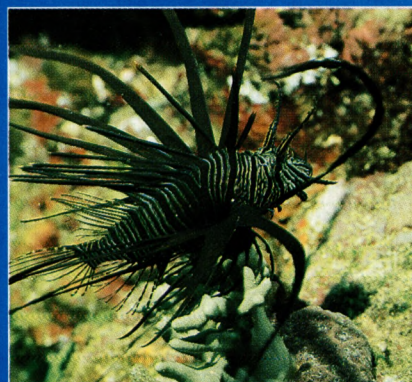


Mike Ball's *Supersport*

photo/Bob Halstead

Minke Whale Expeditions on the Ribbons Reefs

TEXT AND PHOTOGRAPHY
BY AL HORNSBY



A Minke Whale (top) appears out of the blue on its migratory path through Australia's Ribbons Reefs. The 90 foot triple decker catamaran *Supersport* (above) also visits the resident Potato Cod and Napoleon Wrasse at Cod Hole (inset left) and Steve's Bommie (inset right), where exotic Lionfish sit motionless on the coral covered pinnacle.

We slid along a flat, glassy sea at 15 knots on Mike Ball's *Supersport*—the sun warmed our backs and lulled us into a state of ultimate relaxation. Although our first dive was yet to come, the trip was already great. After my flight to Sydney from Los Angeles on Qantas, I'd spent an evening at the Parc Royal by the harbour, surrounded by some of Australia's most famous

pubs. Then it was on to Cairns, departure point for the Great Barrier Reef, with an afternoon open for sightseeing. The following morning, *Supersport's* staff picked us up at the Cairns Colonial Club, where we had spent the night, to begin our Minke Whale/Cod Hole excursion.

Only a few hours later, we were nearing what would be our first encounter with the beautiful Minke Whales that frequent the Ribbons area of the Great Barrier Reef from June through August. As *Supersport* motored smoothly toward the channel where the whales were usually seen, our spotter plane passed overhead, just 500 feet above the calm blue sea. We were ready, our belongings stowed in *Supersport's* 13 cabins; our dive gear assembled and waiting in our personal spots on the dive deck; our cameras resting on the camera rack.

"Dolphins!" came the captain's voice over the loudspeaker and we all ran to the bow as a large pod came in to play. We all were smiling within moments as the graceful animals leaped in and out of the water, just a few feet away. The dolphins' departure left us with a tingle of excitement for the adventure we knew we were about to have. Suddenly, as if on cue, just ahead we saw the dark, rolling backs of whales.

As *Supersport* slowed to a stop, two Minkes, a male and a female, began slowly circling our 90 foot long craft, apparently curious. We went in on snorkel, eager for our first view of these majestic, marine mammals. Out of the blue, vague shapes materialized and suddenly we were looking at—and being looked at by—two 30 foot long

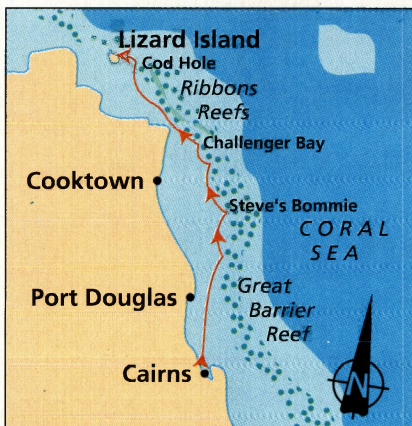
Minkes. The dark, slender bodies had white on the belly and flukes. The whales' eyes were serene and brown, intelligence shining through as they looked us over.

The whales circled us for more than an hour, then again the following morning, until we finally had to leave. The experience was awesome and never to be forgotten. The encounter with these huge, beautiful creatures was even more than our imaginations had been able to conjure. I can still see those big, brown eyes studying me curiously.



The Supersport's friendly, smiling crew.

Seeing the whales was so exciting that, frankly, the trip could have ended then; but there was much more to come. After all, we were on the Great Barrier Reef, one of the earth's most incredible coral systems, and we had a lot of diving to look forward to. Besides the diving, we also had marine life seminars, free Discover Scuba Diving experiences (for the nondivers among us), PADI Ad-



Starting just north of Cairns, the Supersport's Minke Whale Expeditions cruise to Lizard Island via the Ribbons Reefs. Guests come back to Cairns via air.

vanced Open Water training and a free Reef Ecology course, all provided by Supersport's PADI instructors.

Our first dive was at **Steve's Bommie**, a round pinnacle that rises from a 105 foot rubble bottom. It is covered with soft corals, sponges and gorgonian fans—*Anthias* and chromis swarm above like a multi-colored cloud. A huge school of Horse-eye Jacks meandered

(Continued on Page 67)

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Wide Angle

TEXT AND PHOTOGRAPHY BY JIM CHURCH

Most beginning underwater videographers use wide angle for three reasons:

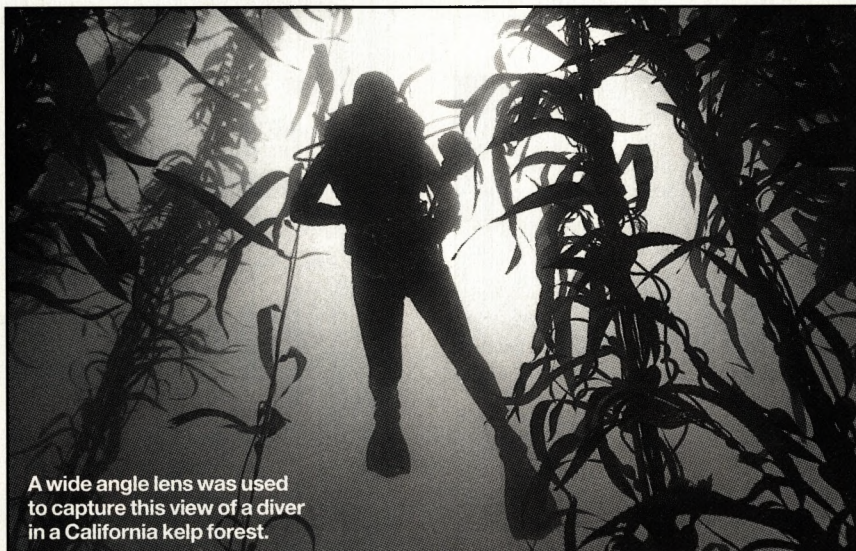
1. It is relatively easy, often just point and shoot.

2. Wide angle lenses reduce the effects of shaky camera handling. Images appear reasonably stable on a TV screen. (With telephoto video, shaky camera handling causes images to jump all over.)

3. Beginners often shoot large subjects. Wide angle video allows them to get closer to their subjects. Being closer reduces the number of suspended particles between camera and subject and leads to sharper images.

THE BASIC EQUIPMENT

Dome ports maintain the underwater picture angle the lens sees. (Flat ports



A wide angle lens was used to capture this view of a diver in a California kelp forest.

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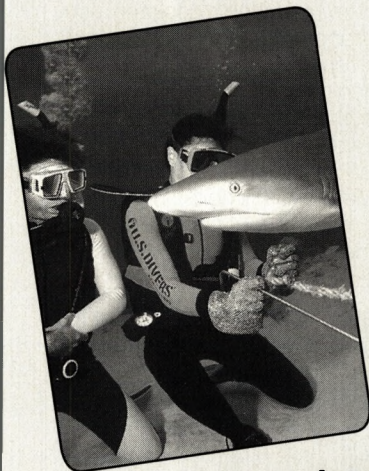
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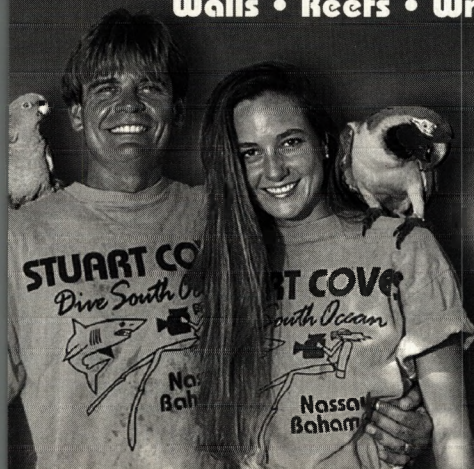
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reduce the underwater picture angle to 75 percent of the topside picture angle.) Supplementary wide angle lenses are also screwed into the threads of the camcorder lens to widen the angle of view. Some manufacturers (Bentley Marine Video, Light & Motion and Quest) use special flat/concave ports that widen the underwater angle of view. These ports are flat on the outside (the wet side) and concave on the inside.

SHOOTING WIDE ANGLE

Let's begin with shooting wide angle video at distances of about 5 to 10 feet. The basic steps are:

1. Set the zoom for wide angle. If you have a supplementary wide angle lens over the camcorder lens, adjust back to telephoto just a tiny amount. Sometimes the camcorder lens will see the housing port in the four corners of the image but you don't always see this in the viewfinder. Experiment to see if you need to make this tiny adjustment with your camcorder and housing.

2. Set the white balance for automatic.

Most camcorders don't show any white balance symbol in the viewfinder when in the automatic white balance mode.

3. If a shutter speed other than 60 appears in the viewfinder, adjust for either 60 or no display.

4. Below about 20 feet, use the red filter provided by the housing manufacturer. Above 20 remove the filter because it will make the images too red. If you can't remove the filter, switch to indoor white balance.

5. Underwater, aim the camcorder at a contrasty part of your subject. While still in STBY, depress the focus control button. This turns on the autofocus feature. After you see the image pop into focus, release the focus control button to lock the focus for this distance. (Each time you change your basic camera to subject distance, go to STBY and press the focus control button to reset the focused distance.)

6. If the above steps are too confusing, set the lens for wide angle. Set the camcorder for auto lock to lock it in the fully automatic mode. If your camcorder has a sliding panel that covers the control buttons, shutting it sets auto lock mode.



The wide angle lens allows a videographer to get closer to a subject. This leads to sharper images owing to fewer suspended particles between lens and subject.

VIDEO LIGHTS

At distances beyond about five feet in open water, video lights have little effect. Most videographers turn their lights off or don't use them. If you move in three or four feet with video lights, remove the red filter or the images will be too red. If you can't remove the filter, switch to indoor white balance.

WIDE ANGLE CLOSE-UPS

Most wide angle systems allow you to focus as close as the surface of the lens port. While this allows you to shoot some fantastic wide angle video close-ups, it also presents a hazard. You aren't always aware of how close the lens port is to your subject when your eye is pressed against the viewfinder port. I've seen videographers damage lens ports and filters when they rammed their ports into rocks or hard corals. To avoid impacts, place your left hand under the housing

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port and use a finger as a probe. If your subject is something that can be touched, use your fingers to brace the front of the housing.

If you shoot wide angle close-ups without a video light, set the zoom for wide angle, use the red filter and set the camcorder for auto lock. I find that autofocus works best for close-ups. If you use a video light, remove the red filter.

Beware of the zoom control. When you zoom toward telephoto, the lens will lose focus. The distance at which you lose focus and the amount of zoom that causes focus loss will vary with different systems. Experiment in STBY before you shoot. 🐟

PETER HUGHES GOES GLOBAL

(Continued from Page 23)

Peter Hughes Diving acquired a share holding in the *FeBrina*, which is now jointly owned and operated by Max and Cecilie Benjamin, Capt. Alan Raabe and Peter Hughes Diving. Freshly refurbished, the *FeBrina* continues to offer fabulous reef and pelagic encounters along Northern New Britain Island, including Kimbe Bay, the Witu Islands and Father's Reef.

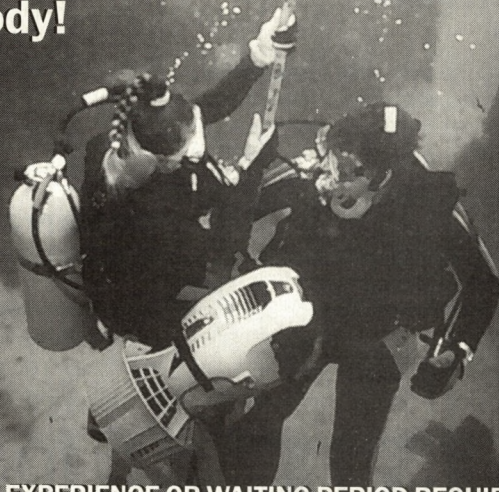
Papua New Guinea will likewise be the new home for the *MV Star Dancer* (formerly the *Sun Dancer*) in January of 1997. The 120 foot *Star Dancer* will accommodate 16 passengers in eight double staterooms and will operate in conjunction with the *MV FeBrina* from their home port at Walindi Plantation Resort. The *FeBrina* is a more intimate vessel, with a passenger capacity of 12. Once both vessels are in charter, it is possible to accommodate even large groups by cruising in tandem.

The *Dancer Fleet* is now in the famed Red Sea as well. Collaborating with Five Star Diving Cruises and Diver's Lodge, Peter Hughes Diving now offers the *MV Moon Dancer*. Departing Hurghada on eight or ten night itineraries, the *Moon Dancer* will visit the coral reefs and shipwrecks that have made the Red Sea one of the world's premier dive destinations. With water clarity often exceeding 150 feet, rich and varied marine life, vertical walls that begin in less than five feet of water and dozens of historic, easily accessible shipwrecks, the Red Sea is a must for any discriminating dive traveler.

The *Sun Dancer II* will be launched in January 1997 to replace the *Sun Dancer* in Palau. At 138 feet long by 26 feet wide, the *Sun Dancer II* will accommodate 20 guests in 10 large double occupancy staterooms. Two 400 horsepower jet drive Safe Boat dive tenders will be used to facilitate quick, comfortable

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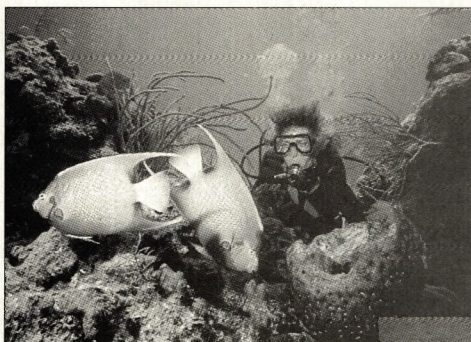
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PETER HUGHES GOES GLOBAL

transport to the dive sites. Palau diving requires tenders since it is often impossible to moor the mother ship over many of the sites. Also, tenders enhance safety for drift diving. These Safe Boats are serious dive tenders, costing in excess of \$150,000 each. They are complete with marine electronics, freshwater showers, tank racks, camera table, comfortable dive ladders and amenities such as warm towels and refreshments. They are espe-

cially well suited for the unique diving opportunities and challenges of Palau.

For more information about the diverse and fascinating world of Peter Hughes Diving, call (800) 9DANCER or (305) 669-9391. Fax inquiries may be directed to (305) 669-9475 and to visit on the World Wide Web, reference <http://www.winnet.net/dancer/> or e-mail dancer@winnet.net.

PRO DIVE

(Continued from Page 36)

Vincent and the Grenadines. She credits Pro Dive's training with helping her stay in

tune with advances in diving instruction.

Carter Takacs attended Pro Dive as a Divemaster and IDC candidate, attracted by both the convenience and quality of the facility. He liked the Hall of Fame pools, low cost accommodations and custom dive boat but remembers the friendliness and dedication of the staff as Pro Dive's best feature. After the ROS and a 10 day internship at Pro Dive, Carter became an instructor at Dive Runaway in Antigua, later moving to Dive Provo in the Turks and Caicos. His ROS training helped him land a job as chief boat captain for Club Med in the Turks and Caicos before moving to Provo Turtle Divers, where he is now the manager. Carter says the realism of the Pro Dive training gave him the skills needed to manage a busy operation like Provo Turtle Divers with a staff of 12 and four boats.

Scott and Betty Lumbert manage CoCo View Resort on Roatan, with Scott in charge of the dive operation and Betty in charge of the resort. Both started their careers as instructor students at Pro Dive, Betty later completing the Master Scuba Diver Trainer course and Scott the ROS. Betty liked the equal treatment of the sexes at Pro Dive. Both Scott and Betty had high praise for the instructor staff, saying "they bring the material to life."

Richard Hartley is a Pro Dive star who has returned to the fold as Director of Training. He was a British Sub-Aqua Club instructor when he first enrolled at Pro Dive in 1990, attracted by the extensive curriculum and the friendly professionalism of the people there. The difference between his previous training and the intensive routine at Pro Dive was so great that he started fresh with the Open Water Certification and went right through to complete the Resort Operations Specialist course. In the course of becoming a PADI Instructor, DAN Oxygen Instructor, Medic First Aid Instructor, Master Scuba Diver Trainer and Nitrox Instructor, Richard says Pro Dive taught him the difference between the "sport of diving" and the "business of diving." Pro Dive's job placement service arranged his first position with Dive Runaway in Antigua and he later moved to St. Martin to help start Pelican Divers. Stints at Club Med in Mexico and Leeward Island Divers in St. Martin were followed by a position as operations manager at UNEXSO in The Bahamas. Good training, experience and talent were all required for UNEXSO's high profile operation, which includes eight dive boats, a hyperbaric chamber and more than 20 dive staff members. Richard says the professional foundation he received at Pro Dive has been the framework for everything else.

Pro Dive has trained an average of about 200 instructors a year during the last decade. Its Ft. Lauderdale location

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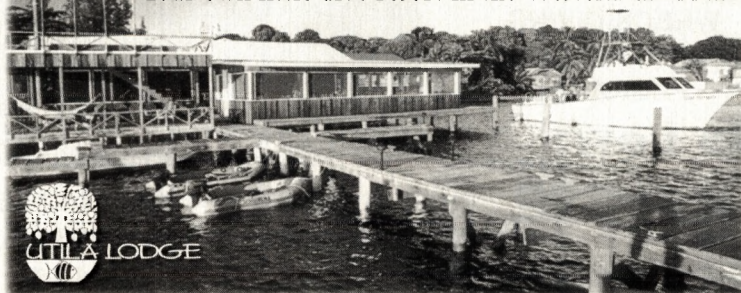
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and extensive facility at the Bahia Mar Resort and Marina attract many of these students but the staff is clearly Pro Dive's most valuable asset. There are 17 instructors, covering a wide range of age and experience but possessing a common enthusiasm for teaching. Pro Dive also has Jayne Haas and Loren Mackay to handle the administrative side of the school, an essential function that is often praised by alumni. Another plus for Pro Dive is the extensive vocational program, which PADI recognized in designating the school as a Career Development Center.

One of the services that makes Pro Dive a standout is the job placement program. This is a lifetime benefit that starts from the moment you enroll at Pro Dive, utilizing an aggressive network of connections throughout the world to find real jobs for Pro Dive graduates. Perhaps you are wondering if there are any jobs left, with 2,000 Pro Dive instructors out there ahead of you. Dave Lawler, Pro Dive's Job Placement Director and also a Pro Dive graduate, reports that requests for instructors have been arriving in unprecedented numbers. With a good market for jobs and a chance to win \$2,000 worth of training, now may be the time to enroll at Pro Dive. And timing, as they say, is everything.

For more information, call (888) PRO-DIVE. International or fax requests should use (954) 761-8915. E-mail requests should be sent to prodive@icanect.net.

MIKE BALL'S SUPERSPORT

(Continued from Page 61)

around the top and several Barracuda moved in and out. A young Green Turtle moved slowly around the base of the bommie. As I watched, fascinated, she began rubbing on a leathery Basta Sponge, not stopping until her shell was clean and shiny.

Next, we moved south to **Challenger Bay**, a large coral garden just inside a pass to the open sea. Beautiful, immense corals rise to near the surface and a steep slope of pure white sand angles away to deep water. Large fish were everywhere. We saw Sweetlips, Barramundi Cod, Coral Trout, Unicornfish and a huge, four foot long Queensland Grouper. Our night dive at Challenger was equally exciting, with many lionfish, an unusual Pearly Moray and hundreds of auger, miter and volute shells crawling in the sand.

Our final dive was another barrier reef highlight, at the famous **Cod Hole**. As we tied *Supersport* to the mooring buoy, the fish came up to the swimstep, ready



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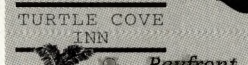


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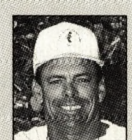


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MIKE BALL'S SUPERSPORT

for the feed. Big Potato Cod, three to four feet long; a huge Napoleon Wrasse of similar size; and a massive school of Red Bass—these fish know dive boats mean hand-outs and they weren't shy! In the water, it was like playing with big puppies. The Potato Cod and the wrasse are completely acclimated to divers and stayed close, sometimes even nudging us, as if to say, "Okay, I'm here—where's the food?"

We all came up with grins from ear to ear, grins that must have lasted for days. That night, Mike and his eight member crew put on a barbecue, got out the guitars and we all had one of those special last nights that only live-aboard divers experience. We knew that our four days on *Supersport* were days we'd always remember. The comforts of a big, stable boat; great food; a friendly, helpful crew; coral reef diving such as only the Great Barrier Reef can provide; and, as if we needed anything else, the calm majesty of whales—what more could we possibly have asked for?

For complete information on *Supersport's* Minke Whale and other expeditions, contact Carol Evans-Aronson at Mike Ball Expeditions' U.S. office; (888) MIKE BALL (645-3225) or fax (520) 556-9598. 🐟

Dive Notes

J.W. FISHER DV-2 U/W CAMERA: The container vessel *MV Neptune Jasper* arrived in Sri Lanka, Colombo, with a vibration in her propeller shaft. Using a J.W. Fishers DV-2 camera system, the Colombo Engineering dive team performed an underwater video inspection. It was discovered one of the four propeller blades had been sheared off.

A Lloyd's Register of Shipping representative was able to make a repair decision as a direct result of viewing the video. It was decided the blade opposite the sheared blade should be cut off to balance the rotation, otherwise the drive shaft bearings would be severely damaged.

The Colombo team did extensive oxygen underwater cutting on the blade, which had a total height of 97 inches and a thickness of 8 inches. The diving team worked day and night, nonstop amid heavy swells, currents and occasional bad weather to complete the job.

Fishers DV-2 is designed to be used as

a deep water drop camera but many commercial diving companies also use the system as a diver-held camera.

Colombo Engineering Enterprises (CEE) has the equipment and personnel



to perform all types of on-board and submarine repairs, including engine and generator repairs, hull cleaning and repair, underwater cutting and welding, as well as just about any type of salvage operation. CEE is in the Passenger Terminal Building, Port of Colombo, Colombo 1, Sri Lanka; 947-145555 or 941-422737, fax 941-439539. 🐟

BELIZE AGGRESSOR III: Aggressor Fleet, the world's leading live-aboard dive operation, introduces the latest addition to its 11 vessel luxury fleet, the *Belize Aggressor III*. The 120 foot vessel is capable of cruising at 15 knots and will provide 18 guests with the ultimate in dive amenities. The *Belize Aggressor III* has a wide stern dive platform with two



boarding ladders for easy water access. Tanks are filled in place. A separate nitrox (DNAX) system is also in place for nitrox fills. There is a state of the art underwater lighting system below the dive platform.

When out of the water, guests can relax on the partially shaded sundeck, featuring a wet bar, barbeque pit and hot-

tub, or they can ascend to the flying bridge for observation and suntanning. In the ship's air-conditioned interior guests will find individual entertainment centers with TV, VCR and stereo systems in the separate dining and salon areas. In addition to all the state of the art features of the *Belize Aggressor III*, guests will enjoy hot freshwater showers, private baths, individual climate controls and TV/VCR players in each of the nine staterooms.

For photographers, the *Belize Aggressor III* is fully equipped with a complete E-6 processing lab, extra large camera work table, battery charging station, camera rinse tanks and light tables for slide viewing. Frequently held underwater photography seminars will be conducted throughout the year by renowned photo pros, Jim Church and Stan Waterman, as well as intriguing L'Aventure Jean-Michel Cousteau programs led by the famed marine explorer and his team.

For a free brochure or reservations, call the Aggressor Fleet (800) 348-2628. Or discover the Web Site at <http://www.aggressor.com>.

BRAC CARIBBEAN BEACH VILLAGE: A new, 16 unit condominium resort, featuring Caymanian architecture, opened in August.

Brac Caribbean Beach Village is on the south side of Cayman Brac, on a reef-protected, white sand beach shaded by palm trees. All condominiums are 1,200 to 1,600 square feet, two bedroom/two bath or two bedroom/three bath, completely furnished and feature oceanview balconies, full kitchens, air-conditioning, ceiling fans and cable TV.

The Captain's Table restaurant serves lunch and dinner daily. Chef Ron Morin, trained at the Brown Culinary Institute of Toronto, created a menu featuring Caribbean and continental cuisine.

Diving guests board one of the three dive boats from the dock for the two tank morning dive. The boats are 53, 50 and 32 feet in length and limited to 14 divers. The dive operator, Brac Aquatics, is the most experienced dive operator on the island, having pioneered diving on here in 1975.

In addition to the morning boat dives, night boat dives and half day or full day trips to Little Cayman's Bloody Bay Wall are available. Snorkeling instruction, resort scuba instruction, certification courses and environment focused dive specialty classes are offered.

For information, call (809) 948-2265; fax (809) 948-2206; in the United States call (800) 791-7911.

ADOPT-A-MANATEE PROGRAM: Twenty-two Manatees who regularly winter at Blue Spring State Park near Orange City, Florida, have been chosen for one of Save the Manatee Club's three Adopt-A-Manatee programs.

SMC also has an Adopt-A-Manatee program at Homosassa Springs State Wildlife Park (HSSWP) on Florida's west coast. The park is a rehabilitation facility for Manatees who are recovering from injuries before being released back into the wild.

The Adopt-A-Manatee program is the primary source of funding for the club. Funds from the program go toward public

awareness and education projects, Manatee search, rescue and rehabilitation efforts and lobbying to ensure better protection for Manatees and their habitat.

Currently, there are about 2,600 Manatees left in the United States and they are listed as endangered by the U.S. Fish and Wildlife Service.

For more information on Manatees or the Adopt-A-Manatee program, write to Save the Manatee Club, 500 N. Maitland Avenue, Maitland, FL 32751 or call (800) 432-JOIN (5646). You can also access SMC's Web Site on the Internet at <http://www.objectlinks.com/manatee>.

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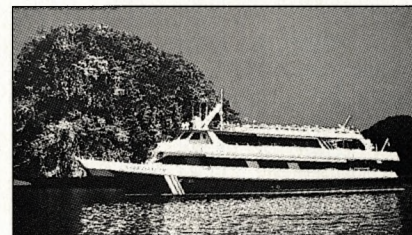
Field Station

Dive Notes

MV STAR DANCER TO PAPUA NEW GUINEA:

The *Star Dancer* will operate in conjunction with the *FeBrina* from their port at Walindi Resort, Papua New Guinea, providing large groups the opportunity to charter both vessels together.

The 120 foot *Star Dancer*, which accommodates 16 passengers, will commence her inaugural cruise in early February 1997. Ten and seven night itineraries will be offered throughout



the year, exploring Kimbe Bay, Witu Islands, Inglis Shoal, Fathers Reefs and special expeditions between Walindi and Rabaul. *Star Dancer* offers two master staterooms and five deluxe twin staterooms as well as the special owner's suite.

For more information, contact your favorite dive travel planner or Peter Hughes Diving, Inc., 6851 Yumuri Street, Suite 10, Coral Gables, FL 33146; (800) 9DANCER, (800) 932-6237, (305) 669-9391, (305) 669-9475 (fax). The Internet address is <http://www.winnet.net/dancer/> or <http://www.peterhughes.com/dancer@winnet.net>.

BONAIRE GUIDED SNORKELING:

Offered to visitors for the first time in May 1996, this island-wide program can be booked through all dive shops on Bonaire. With experienced guides, slide presentations on fish and coral identification, marine environmental protection and more, the program is designed to provide snorkelers with the same quality underwater experience that divers have long enjoyed. Manual, snorkel map, slide presentation, snorkel equipment and a well-trained snorkel guide are all included in the program. Twelve Bonaire sites have been selected and mapped out for this program.

For more information, contact the Tourism Corporation Bonaire at 10 Rockefeller Plaza, Suite 900, New York, NY 10020; (800) U-Bonaire, (212) 956-5911; fax (212) 956-5913.

CAPT. BILLY'S NITROX CLUB: Capt. Billy's Key West Diver, Inc., has formed the nation's first Nitrox Club for nitrox certified divers. The annual membership fee is \$20 and provides discounts on nitrox fills, free cylinder rentals with nitrox fills, 15 percent discount on equipment (not otherwise on special sale), monthly club dives at special low rates and an annual treasure hunt and cookout.

Captain Billy Deans, an innovator of technical diving, has had nitrox available to nitrox certified divers for many years and teaches nitrox and technical diving to divers all over the world. For further information on the Nitrox Dive Club, daily trips, classes and dive packages, call Key West Diver, Inc., at (800) 87-DIVER or e-mail 76265,65@compuserve.com. 🐟

Nai'a's 1997 FIJI CRUISES: See & Sea Travel of San Francisco has announced a broad variety of 7 and 10 day cruises aboard the magnificent *Nai'a* in Fiji.

Nai'a's great strengths really impress her customers. The crew has years of experience and there is freedom to do as many dives as you wish each day. Best of all, *Nai'a*'s diving is colorful and action packed!

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For further information, contact Sea & Sea Travel, 50 Francisco Street #205, San Francisco, CA 94133 or phone (415) 434-3400, fax (415) 434-3409, e-mail divxprt@ix.netcom.com or visit on the Internet at <http://www.divxprt.com/see&sea>. 🐟

HYPERBARIC CHAMBER AT PANAMA CITY BEACH HOSPITAL: The Bay County Medical Center in Panama City Beach, Florida has a hyperbaric chamber available 24 hours per day, seven days per week.

The chamber is a 22 by 6 foot steel double lock facility that can accommodate up to nine persons at a time. It is capable of delivering 100 percent oxygen, nitrox or heliox. Treatments can take between two to seven hours and average about six hours per patient. Hyperbaric physicians are trained to treat injuries, including joint pain, neurological injuries or arterial gas embolisms.

For additional information, call (800) PCBEACH. In Canada, call (800) 553-1330. Or access through the Internet at <http://www.travelfile.com/get?pcbeach>. 🐟

POSADA DEL SOL BIOLOGICAL REEF STUDY: Posada Del Sol, Guanaja, Bay Islands, Honduras, is hosting a biological reef study with Texas A&M University of Galveston. This is the first intensive study to identify the types of corals and fish that make up the reef system of Guanaja and the other Bay Islands. It will be invaluable in promoting the prudent and careful management of these precious natural resources. The nine month pilot study currently in progress will be followed by a three year study.

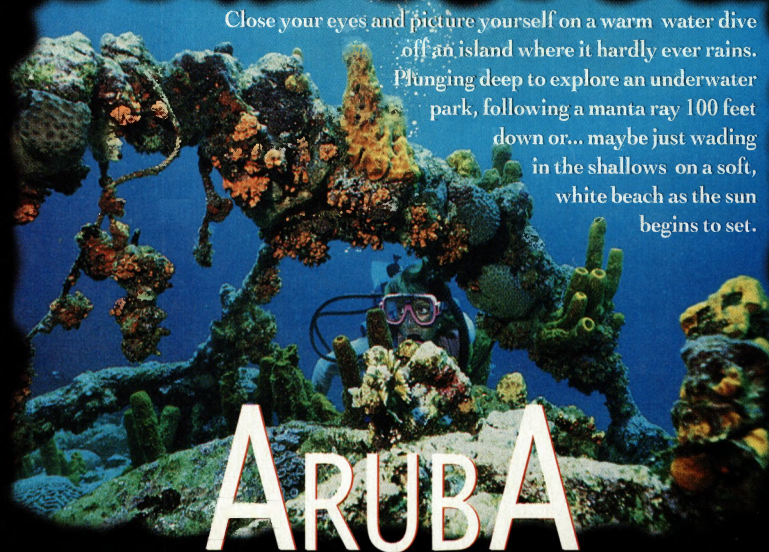
Gene and Sara Baugher from Hou-

ston, Texas, have joined the management team of Posada Del Sol. Their expertise and enthusiasm for diving will be a valuable asset to the resort. For more information call Posada Del Sol at (800) 642-3483, (407) 624-3483. 🐟



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Although Bermuda has many shipwrecks (an estimated 500), only a few are real giants. It is these mega wrecks that are especially intriguing. The Greek steamer *Pelinaion* is just such a wreck—a ship that was once the size of a 38 story office building.

She was a steel hulled 385 foot long cargo steamer, with a 50 foot beam and a displacement of 4,291 tons. With a

lone smoke stack amidships, she was rigged with masts fore and aft to support her cargo booms. The *Pelinaion* (pronounced Pelly-nay-on) was one big ship for her time.

She did not begin her career as a Greek steamer, she was a British vessel. The steamer was built at Port Glasgow in 1907 for the Hill Steam Ship Company and launched as the *Hill Glen*. Seven years later the ship was sold and renamed *Doonholm*. She changed ownership several more times before being

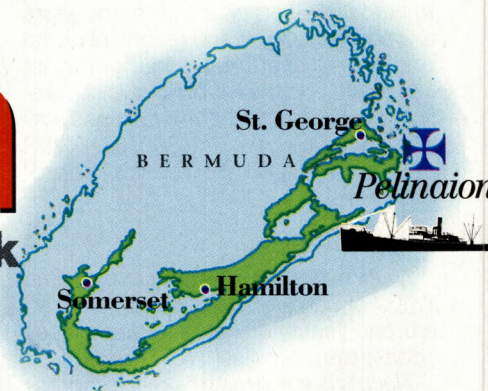
purchased in 1927 by G.K. Ktistakis of Chios, Greece. The vessel was renamed *Pelinaion* in 1939.

On January 16, 1940, the *Pelinaion* was enroute from West Africa to Baltimore, Maryland, with a cargo of iron ore. The captain was unaware Bermuda's lighthouse had been blacked out owing to the war in Europe. Thinking he was still 12 miles from Bermuda, the captain was running at full speed when his ill fated ship crashed into a coral reef one mile south of St. David's Head, off

The Pelinaion

Bermuda's Bewitching Boiler Wreck

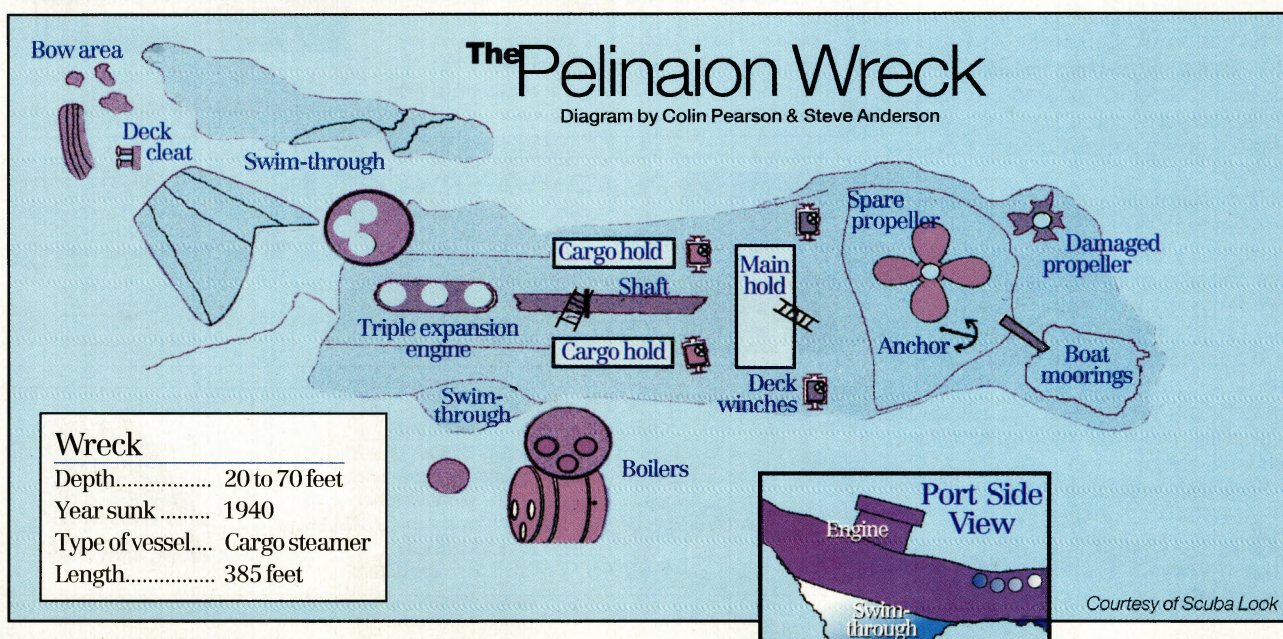
TEXT AND PHOTOGRAPHY BY GERI MURPHY



Bermuda's East End.

Because of her massive size, the *Pelinaion* is one of Bermuda's most awesome wreck dives. She lies sprawled across the ocean floor, with her keel bent and broken across several coral ridges, thus providing interesting opportunities for swim-throughs beneath the shipwreck itself. Diving depths range from 20 to 70 feet, with the wreck surrounded by an interesting collection of coral reefs, crevices, canyons and ridges.

Her bow section is a jumble of steel plates, beams and deck cleats—disjointed and tangled by the high speed collision. The most impressive portion of this ship-



wreck giant is the mid-section, crowned by a huge boiler that rises to within 20 feet of the surface. You can tell the wreck has been submerged for a long, long time—the top surface of the boiler is covered with dozens of stony dome corals. When viewed from the right angle, the top of the boiler looks much like an enormous smiley face with a winking right eye.

Just a few feet from the boiler is a towering steel monument that was once the great ship's triple expansion steam engine. It is incredibly massive and must weigh tons. Stretching aft the engine is the propeller shaft, three cargo holds and at least four winches. Off to the ship's port side are more boilers that must have spilled from the ship's innards. Other artifacts include ladders, anchor chain, deck cleats and 100 other assorted ship parts. There is even an immense, unused spare propeller lying on the collapsed decking.

The seductive *Pelinaion* provides a never ending source of intrigue and fascination because all her parts remain where they settled when the violent smash-up occurred. It is truly an undersea time capsule that documents the amazing steel-bending force and horrific damage

BERMUDA DIVE OPERATORS

The *Pelinaion* is just one of dozens of shipwrecks awaiting exploration. If you are interested in visiting Bermuda and diving the wrecks, contact any of Bermuda's dive operators:

Blue Water Divers Co., Ltd.
P.O. Box SN 165
Southampton SN BX, Bermuda
(441) 234-1034
(441) 234-3561 (fax)

Fantasea Diving
Darrell's Wharf
1 Harbour Road
Paget PG 01, Bermuda
(441) 236-6339
(441) 236-8926 (fax)

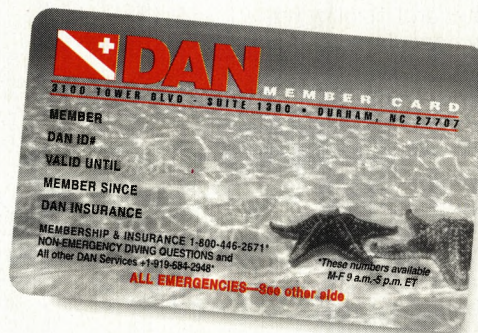
Nautilus Diving, Ltd.
P.O. Box HM237
Hamilton HM AX, Bermuda
(441) 238-2332
(441) 295-9485
(441) 234-5180 (fax)

Scuba Look
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(441) 293-7319
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(441) 236-0394 (fax)

caused when a giant steel ship collides with an immovable coral reef, while running at full steam. This wreck site is dived on a year-round basis (weather permitting) but visibility is clearest from September through the winter months. 🐠

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Be a Reef Lover... Always Hover!



The endless adventure began in November of 1992. I had been diving for 11 years, mostly in the kelp forests off the coast of Southern California. The water there usually hovers in the mid to upper 60s (°F); visibility ranges from 10 to 60 feet. Now I was off on my first trip to Belize. I had heard about the 80°F water and visibility that exceeded 100 feet most of the time. I was looking forward to diving with less neoprene and less weight.

Four years have passed since that first trip and I have now been to Belize more than 20 times. During these visits I have dived every major part of the country, from the 170 mile long barrier reef, to Glover's Reef, Lighthouse Reef and the Turneffe Islands. Each area is distinctively different.

ceeds 120 feet. The U/W view is magnificent and one I will not forget.

Continuing the flight south to the Placencia area the barrier reef curves out a bit farther from the mainland. In between it and the mainland is a deep, la-

Belize

Three Atolls and a Barrier Reef—Endless Adventures

TEXT AND PHOTOGRAPHY BY BRAD GERBER

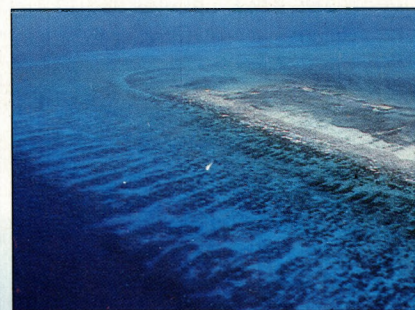
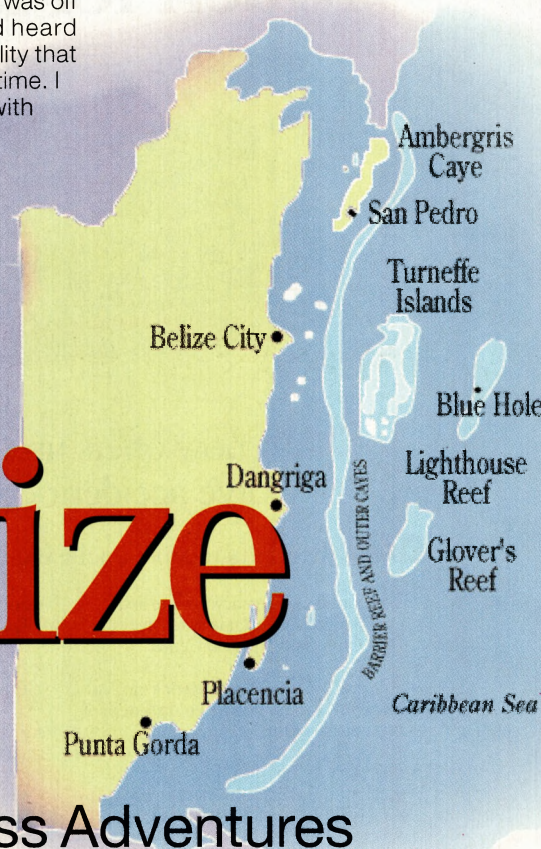
On my last trip I had an opportunity to fly over the areas I had dived. They are as unique when viewed from the air as they are underwater.

We took off from Ambergris Caye, flying over and north of San Pedro. From the air you can see San Pedro and the barrier reef about one-quarter mile offshore. Up north, near the area of Rocky Pt., the barrier reef literally touches the shore. Flying south you can see the southern tip of Ambergris with the **Hol Chan Marine Reserve** cut clearly visible. This part of the barrier reef is riddled with caverns, tunnels, small drop-offs and some of the most spectacular spur and groove formations in the Caribbean.

As we flew south toward Dangriga, the barrier reef took on another look. It became a solid barrier coming up out of the blue to protect the islands and mainland. This was very dramatic from the air and it reminded me of the way the barrier reef looks underwater. It emerges from the depths in a ridge visible as far as the eye can see. In this area, visibility often ex-

ceeds 120 feet. The U/W view is magnificent and one I will not forget. The area within the lagoon drops to about 150 feet along the barrier reef. One of my most memorable dives in Belize was at an area called **North Spot**. There we encountered more than 50 species of fish, including a huge school of Silversides. As we ascended, an eagle ray "flew" by.

A few days later I departed Belize City by plane to complete my aerial tour. The first atoll we reached was Turneffe. It offers sandy/eel grass flats for snorkeling and shallow dives as well as diverse vertical walls. The Turneffe Atoll is known for its fish and as we flew over I could clearly see why. The atoll consists of mangroves and islands. Mangroves are the beginning of the food chain and home to millions of juvenile fish. The little fish attract other, bigger fish and so on. Owing to the tremendous numbers of fish and nutrients in the water, most dives are made according to the tide and wind direction. If you get visibility of less than 80 feet the



Above: Turneffe Island Atoll is best known for exciting wall diving, abundant fish life and prolific undersea flora.



Above: Lighthouse Reef Atoll has two world renowned dive sites, the mystical Great Blue Hole and Half Moon Caye Wall.



Above: Glover's Reef is the most southerly and, with more than 700 patch reefs, provides a panorama of exquisite diving.



Running 170 miles from north to south and some 12 to 30 miles offshore is Belize's Barrier Reef, much of which is unexplored.

wind must be strong and the tide is receding. Grouper spawning occurs seasonally at the north side of Turneffe.

Continuing east, you approach Lighthouse Reef Atoll, known for its vertical walls, big sponges, excellent visibility and the **Great Blue Hole**. Lighthouse has four islands and is the best known

(Continued on Page 147)



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Main photo: David Wolfe. U/W photo: Cathy Church



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SKIN DIVER MAGAZINE'S

SNORKELING

• TOURBOOK •

**A Snorkeling
Ensemble
for
Children**

.....
**Teaching
Kids to
Snorkel**

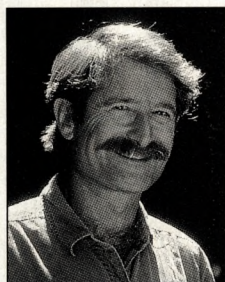
**Juvenile
Fish and
Their Adult
Counterparts**

**A New
Fish ID
Book for
Snorkelers**

Snorkeler's Perspective

The U/W World is a Child's Playground

BY JOEL SIMON



Snorkeling is great fun. Floating effortlessly above a shallow reef, watching an endless array of activity evokes sensations of joy and fascination. Brightly colored fish of diverse form and abundant energy mingle with coral and other vibrant elements of the marine environment. However, like many activities, one of the greatest joys is sharing it with those you love.

As a 12 year old child, I had the great pleasure of showing the underwater world to my father. We were already familiar with starfish, octopus, mussels, barnacles, clams and anemones. We'd caught Bonito, Barracuda and Tom Cod from piers, and Grunion by hand under a full moon on Huntington Beach, California. As a family we spent hours searching through the tide pools of the Palos Verdes Peninsula in Southern California. I was lucky enough to grow up by the ocean and was snorkeling almost as soon as I could ride my bicycle to the sea. But my Dad had never seen the realm of fish first hand until I encouraged him to put on a mask, fins and snorkel and see for himself the aquatic playground that was practically in our front yard. And, as much as I've always enjoyed snorkeling, it is the joyous hours spent sharing this activity with those I love, especially my father, that I remember best.

Snorkeling is an ideal activity for people of all ages and interests to share with each other. In fact, this is probably the single most valuable aspect of the sport. The skills are easily mastered by both young and mature. The marine environment is equally intriguing on every level, from a child's playful view to a biologist's scientific observations.


During workshops, I've taught snorkeling to children barely old enough to walk and to adults nearly too old to walk. I've

watched as they were then able to participate in the joys of snorkeling together. I love fish but I love people more. Seeing families, from young kids to elderly grandparents, get in the water with masks, fins and a spirit of adventure, and later exit with smiles, laughter and a sense of shared discovery is a great joy.

Surprisingly, many of the prerequisites for successful snorkeling apply equally to everyone, regardless of age. While swimming ability is helpful, feeling comfortable in the water is more important. Both young and old share the entire range of emotional responses to the sea—from fear to fascination. Many children seem to take naturally to snorkeling, in some cases more easily than adults who may have great swimming skills but are challenged by breathing through their mouths. Ultimately, the water supports nearly anyone with the desire to learn.

Whatever your size, equipment must fit properly to work. As you will see in our Gearbag section, today's stores offer a wide variety of masks, fins, snorkels and other accessories to outfit children.

Also, with the proliferation of excellent instructional materials directed at inquisitive young minds, children are both naturally curious and educationally motivated to better appreciate biological, environmental and conservational issues associated with the sea.

Overall, the travel industry is becoming more sensitive to the family market and is evolving creative new contexts to accommodate children and parents. Many dive resorts feature family month, where snorkeling classes and excursions for young people are included in addition to normal adult activities. Some cruise ships also have departures especially designated for families and, along with other services especially geared to kids, may offer attractive promotional discounts. In this issue of Snorkeling Tourbook we look at the world of snorkeling as an activity for children, with the hope that they will teach their parents well. 

Inside Snorkeling Tourbook

Brought to you by:

Joel Simon, **Editor**

Tamara Collins, **Executive Editor**

Susan Grube, **Art Director**

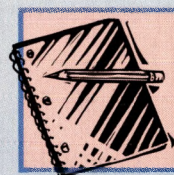
Stephen Frink, **Contributing Editor**

Snorkeler's Gearbag



A Snorkeling Ensemble: Deep See Covers Kids

Tips and Techniques



Learning to Snorkel: Special Techniques for Kids

Life on a Shallow Reef



Advanced Fishwatching: Juveniles and Their Adult Counterparts

The Resourceful Snorkeler



New Marine Guidebook: Humann Leads Us Into Shallow Water



A Snorkeling Ensemble: Deep See Covers Kids

BY TAMARA COLLINS

PHOTOGRAPHY BY BONNIE J. CARDONE

Most children are curious about the ocean and its inhabitants. During a beach dive or snorkel, I am often engaged by inquisitive children who want to know what I see underwater, how I breathe, if it's scary and if I see sharks. I always take the time to answer their questions, enjoying the



curiosity of these burgeoning underwater explorers.

I didn't begin my underwater explorations until I was 24. The interest in the ocean was always there but, with nondiving

parents, I didn't have anyone to initiate me into the diving world. I had a mask and snorkel when I was young but the gear was cheap and ill-fitting; designed more as a toy than a tool.

These days, there are a number of dive companies manufacturing good quality gear for children. Deep See offers children's gear in addition to a full line of dive and snorkel equipment. Its children's ensemble strikes a good balance between affordability and quality—an important consideration to parents who are investing in something their children will outgrow in a few years. The mask, fins, snorkel, booties and shorty described in the sidebar are made to the same specifications and constructed of

the same fine materials that go into adult gear, making them safe tools children (and parents) can depend upon in the alien environment of the ocean. The kids will also appreciate the attractive styling and color combinations offered by Deep See—it's important to be safe but looking cool is where it's at.

The children of avid divers, such as Jacques Pillons (right and left) and Serena Horn (left), who are brought into the fold early are able to acquire nearly a lifetime of U/W experience and expertise. Jacques is starting his snorkeling forays at the age of nine. He was kind enough to test and model the Deep See gear for us. The mask, snorkel, medium



shorty and large fins fit him perfectly and enabled him to have an enjoyable snorkel off the *Truth* in the waters of California's Channel Islands. 🐠

IN BRIEF

Deep See Children's Ensemble

Phone: (800) 367-2626

Shorty Wetsuit

Fabric: 2mm nylon II neoprene

Features: Lycra panel at underarm seams; durable flat lock construction; extra long, non-corrodible nylon back zipper with nylon webbing pull; touch-fastening tab over the top of zipper; key pocket

Sizes: Extra small (3 to 4 years) through extra, extra large (15 to 16 years)

Colors: Black/lime, black/purple

Price: \$55

Deckmaster Booties

Fabric: 3mm neoprene with plush liner

Features: Vulcanized rubber sole with ridges;

soft, fabric seam tape around ankle

Sizes: Girl's and boy's small, medium and large

Colors: Pink/purple (girls), purple/lime (boys)

Price: \$29

Mini-Funview Mask

Features: Silflex skirt; adjustable Silflex strap; ABS plastic frame; tempered glass lens

Sizes: Designed to fit 6 to 11 year olds

Colors: Lime, blue, pink

Price: \$18

Mini-Funstream Snorkel

Features: Plastic J-snorkel with replaceable Silflex mouthpiece; built-in snorkel keeper

Sizes: Designed for 6 to 11 year olds

Colors: Lime, blue, pink

Price: \$5

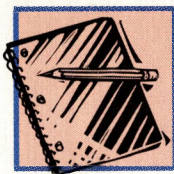
Junior Fin

Features: Plastic fin with adjustable strap, full foot pocket

Sizes: Small, medium, large

Colors: Lime, blue, pink

Price: \$16



Learning to Snorkel: Special Techniques for Kids

BY JOEL SIMON

Long before I learned to swim, I could fly in my dreams. Perhaps it was these childhood dreams that drew me to the water. By simply putting on a mask, snorkel and flippers, gravity slid away. At 8 I fell off a horse; at 11 I fell off a house; at 14 I fell off a speeding sled; and, at 18, off my downhill skis. I fall no more, now I float on the water's surface. And that's just where I, and snorkelers of any age, like to be.

How many times have you heard the expression, "It's so simple a child could do it?" With snorkeling, it's so simple especially a child can do it. There are techniques for helping children develop essential skills while simultaneously relieving the anxiety parents may have as they deliberately immerse their progeny into the wilderness of sharks, morays and other innocent "monsters" that live in the imaginative minds of youngsters. In fact, part of teaching kids to snorkel is unveiling their unique and often inventive concerns regarding the sea.

These days, it's easier than ever to share the joy of snorkeling with your children. In today's world, families are visiting tropical shores more often and more easily than ever before. During these journeys, snorkeling is a perfect recreational activity for the entire family—and especially the kids.

Here's a real life example. Early one gray November morning, my friends, Jane and Mark Kriss, called and asked, "Isn't there somewhere warm we can go to teach the kids how to snorkel?" Snorkeling with her brother and parents in the Greek Isles remains one of Jane's fondest childhood memories. Now she was looking for a vacation that her own family could enjoy together.

"Have you thought about the Caribbean?" I asked. "Every day," they replied in unison.

First, we went to the local dive shop to get the kids, Jessie, age 7, and Peter, age 5, some equipment. A properly fitting mask is your child's greatest assurance of enjoyable snorkeling. Masks come in a variety of shapes and sizes, so be sure to find one that comfortably fits your child's face. Jessie performed an easy test by holding the mask to his face without placing the strap over his head. He breathed in gently through his nose and the mask was lightly sucked to his face, staying firmly in place. This was a good fit, sealing out the air as it would the water. Small, lightweight fins are best for youngsters, since they minimize undue strain on legs, knees and ankles. The salesman recommended we get the kids some flotation devices, either inflatable vests or foam belts. These can be helpful pieces of gear but, in this case, both Peter and Jessie already knew how to float. A couple of snorkels and some waterproof fish books rounded out the necessary equipment.

After the family returned from vacation, I called for a full report. The kids came back fluent in fish lingo. "It was fantastic seeing all the fish and seeing the kids see all the fish," said Jane. "And it was really safe for the children. The only danger was not wanting to get out of the water!"

Snorkeling can be as safe for children as it is enjoyable. And, parents can really help by making sure their kids get proper instruction. Resorts will often have qualified teachers available but, regardless of who assists, there are some important elements to remember.

Most importantly, children must be comfortable in the water. This can begin well be-

fore a snorkeling vacation. Jane said, "It's fun to start them out in the bathtub at home before you go. Peter learned to use his mask and snorkel in the tub before we tried the ocean and it really helped."

Although some kids may take naturally to mask, snorkel and fins, learning to use equipment usually takes time. Remember, snorkeling requires training. Practice makes perfect and calm, shallow water is the place to begin. Shallow areas are ideal for experimenting with buoyancy. Salt water supports snorkelers better than the fresh water of pools and developing a confident ability to float is a major step toward safe, relaxed snorkeling. Children should also practice treading water (which is very easy with fins) and prove to both their parents and themselves that they can calmly keep their heads above the water should the need arise.

Children have varied reactions to the sea. Some are filled with trepidation, others jump in with boundless enthusiasm. Mark and Jessie took the methodical approach. "First we mastered the mask, then the snorkel and finally the fins. We took the entire first day to become comfortable with the water and the equipment. It was worth it, the rest of the week just floated by," said Mark.

Ideally a mask stays reasonably dry on the inside but it can (and does) accidentally fill with water. A flooded mask can be easily cleared by raising the head, pulling the lower edge away from the mouth and simply letting the water drain out. The same applies to snorkels. A burst of air should clear a clogged snorkel but breathe in cautiously afterward just to make sure. If there isn't air available, then simply remove the snorkel



PHOTOS/CAROLYN PASCAL-GUARINO

from the mouth. Under the controlled conditions of very shallow water, it's good to practice deliberately flooding and clearing both mask and snorkel so children can calmly learn these techniques.

As young snorkelers become more at ease wearing a mask, breathing through their mouths and feeling the salty water support their bodies, deeper water offers an invitation, not a threat. And the best way to get there is with fins. Fins facilitate fast swimming, as any kid will quickly discover, but their greatest asset is increased efficiency. Used gently, they let snorkelers glide nearly effortlessly along the surface and keep the body in a relaxed horizontal position. You might mention to your kids that leisurely relaxed movements don't scare the fish. So, if they move slowly, it is safer and they will seem more friendly to the animals and will see much more.

From her experience with Peter, Jane adds, "It's important to let the kids develop their skills at their own pace. Every level is enjoyable, especially if the children aren't pushed beyond their limits."

A child's limits will change with practice. As skills improve, these limits will evolve accordingly. There is no glory in exceeding comfort levels, in fact, it can be potentially hazardous. Parents can help children acknowledge these limits in a positive way, by encouraging them to get out of the water when they feel tired, cold or uncomfortable for any reason.

Above: Teaching kids to snorkel helps them develop self-confidence and instills an early awareness of the fragile beauty of the sea.


Children should also be instructed not to snorkel alone but with their friends or family. This is called the buddy system and actually makes snorkeling safer and much more enjoyable. Buddy teams invariably see more than single snorkelers and sharing these observations is part of the joy.

As the Kriss' discovered, snorkeling was an activity easily learned by their children and enjoyed by all. Childhood memories hold a special and intimate place in the hearts of every adult.

There is plenty of other valuable information kids (and parents) should know about snorkeling: attention to sunburn; respect and education regarding the marine environment; surface diving; and basic first aid, to name a few. For further reading contact NAUI at



High-quality snorkeling gear, made specifically for kid's smaller features, ensures a proper fit for safety, protects against sunburn, stinging marine life and abrasions—and keeps them warm for extended periods of exploration in the water.

(909) 621-5801 and ask for the *Snorkeling for Kids* coloring book and videotape (\$18). PADI, (800) 729-7234, offers a family snorkeling video and booklet called *Discovering the Underwater World* (\$30.50). Call SSI at (970) 482-0883 for information on its *Snorkeling Video* (\$25.95) and NASDS, (800) 735-DIVE, has *Safe Snorkeling*, a book that retails for \$9.95. 



Advanced Fishwatching: Juveniles and Their Adult Counterparts

BY TAMMY PELUSO

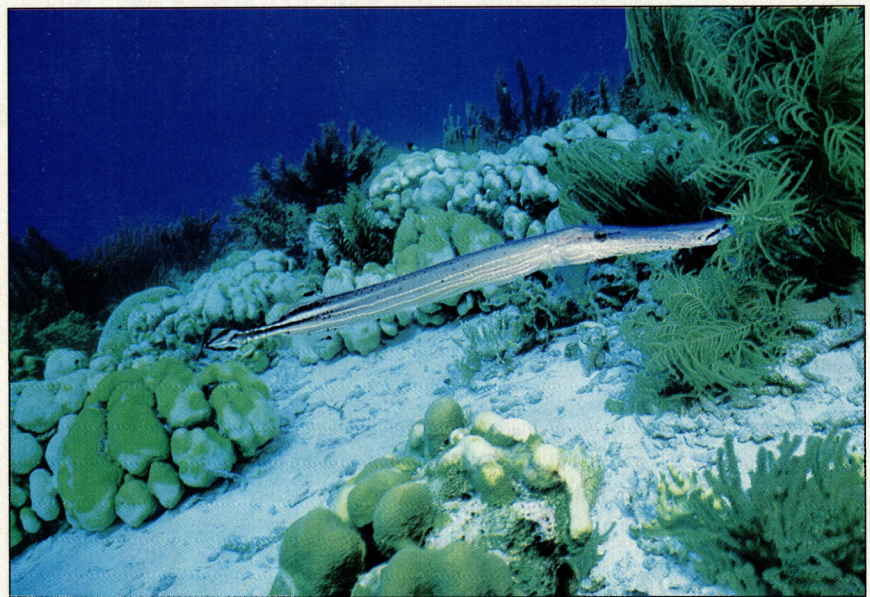
The colors created by a coral reef and its myriad inhabitants nearly always leave snorkelers with a dramatic and somewhat blurred first impression. But the coral reef is just like any other neighborhood; spend a little time there and you'll soon know your way around.

An abundance of reference material and informative courses, available at most popular snorkeling destinations, makes it relatively simple for even casual underwater explorers to delve into the basics of fish identification. The adults of most species are fairly easy to identify; with the juveniles, however, identification is sometimes a little bit trickier.

Quite often the wild and flamboyant markings and color displays of the adults pale in comparison to the outrageous costumes worn by the juveniles. Sometimes the colors remain but the markings and shape drastically change: distinguishable spots and neon speckles move, merge or disappear and, in many species, the brilliance of youth completely fades away. In the most outrageous transformations, the juveniles and adults of a particular species bear no resemblance at all.

Although pretentious outfits appear designed to amuse, the bizarre colorations and outlandish markings are, for many fish, normal and necessary. The fish use these colorful masks for a variety of purposes, including intimidation, protection and predation. As fish age their surroundings and requirements often change. When necessary, pattern and color changes accompany the transition, providing the young fish the camouflage or weapons necessary to ensure its safety and survival.

Before you try to identify juveniles it's important to familiarize yourself with the body



PHOTO/STEPHEN FRANK

*Unlike the fish on the facing page and possibly because it begins life adept at color change, Trumpetfish (*Aulostomus maculatus*), both in the adult (top) and juvenile (right) phase, have similar coloring characteristics and differ significantly only in size.*



shape, size, habits and characteristics of the fish living in the reef community. Although, in many cases, the form or size of the fins or tail may change, more often than not the overall shape remains the same. Body shape is one of the most reliable features used for identification. Colors and markings are much

more subject to change and variation.

If a juvenile resembles the adult in form, the next feature to consider is the size; the juvenile should, of course, be substantially smaller. Next, you need to gather more information so you know what to look for. While many species experience extreme transformations, others



PHOTO/STEPHEN FRINK

*Top: The Threespot Damselfish (*Stegastes planifrons*) becomes darker with maturity. Right: The juvenile Threespot Damselfish is easily distinguished from the adult. The bright yellow coloring also highlights the namesake spots on the tail and pectoral fin.*

retain distinguishing markings throughout their life. Most fish ID books provide fish-watchers all the information necessary to identify both common and unusual juveniles.

Juveniles are actually easy to identify, especially when you know what you're looking for. In many cases, similar changes occur within each species. Many juvenile butterflyfish, for example, are cleverly designed with a concealing dark bar to hide behind and a confusing false eye. Rock Hinds and coneys tend to retain their spots but undergo drastic color changes. And parrotfish, perhaps the most amazing quick change artists of them all, undergo dramatic changes in shape, color, size and occasionally, sexual orientation. Infinite variations make parrotfish juveniles among the most challenging to identify.

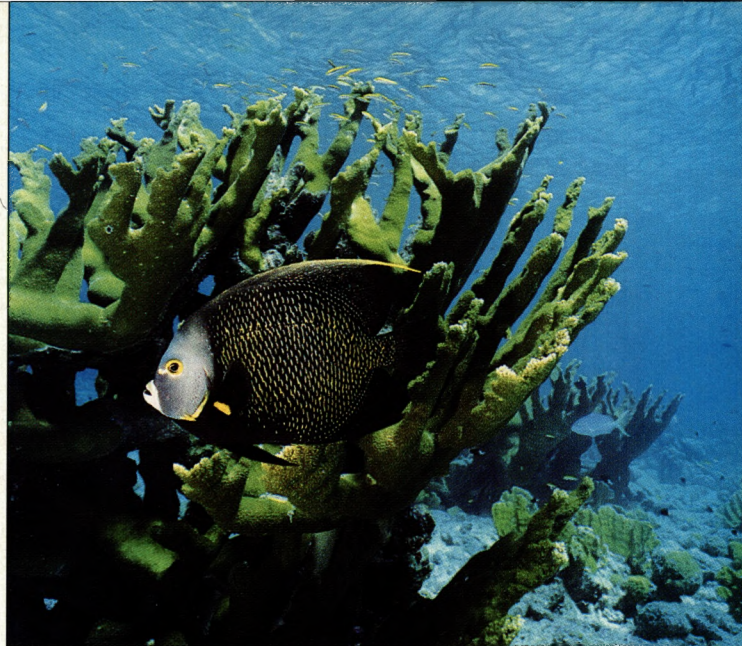
You can also uncover many clues about both adults and juveniles by spending time watching the fish's behavior: What is it eating? Where does it live? Is the fish exhibiting any unusual or notable behavior? Fish are creatures of habit and their actions and behavior are often keys to identification.

The accompanying photos provide adult and juvenile examples of some common reef species often encountered by snorkelers. The juvenile Trumpetfish (*Aulostomus maculatus*), is one of the easiest to recognize. The slender trumpet-shaped snout quickly distinguishes it from other reef inhabitants. Being a master of camouflage the Trumpetfish dis-



plays a wide variety of color phases, often changing from brilliant yellow to dark brown in seconds. Other distinguishing features are pale horizontal lines, scattered black spots and a black streak on the upper jaw. Except for slight variations in body shape, color and markings, juvenile Trumpetfish are just adults in miniature form.

One of the most gregarious fish on the reef is the French Angelfish (*Pomacanthus paru*), notorious for boldly approaching divers and snorkelers. The development of the French Angelfish is a dazzling visual display. The juvenile starts life dressed in black, with three bold yellow vertical stripes and a gold band that runs around its lips and down the center of its face. With age the juvenile French Angel's golden stripes are replaced by stunning gold flecks and a prominent yellow ring around the eyes. Intermediate French Angelfish are identified by two light vertical stripes that fade with age. The only identifiable feature similar in both the adults and juveniles is the slender, disk-shaped body and rounded tail fin. Adults cruise the reef alone or in pairs; juveniles prefer sandy areas and the safety of shady crevices. Juvenile French Angelfish will often act as cleaners for larger



PHOTO/STEPHEN FRINK

*Top: The subtle coloring of an adult French Angelfish (*Pomacanthus paru*) bears no resemblance to the gaudy, jailhouse-striped juvenile (above) except in general shape. This difference is thought to differentiate the juveniles as nonrivals during mating season.*

fishes, removing debris and parasites. This arrangement provides young French Angelfish protection and easy meals.

The brilliant hues and splashy patterns of most juvenile Damselfish fade with youth, but the striking contrast between young and old makes Damselfish fun to identify and fairly easy to spot on the reef. The metamorphosis of the Threespot Damselfish (*Stegastes planifrons*) is one of the most drastic; mutating from a golden luminescent hue to drab tan, yellowish brown or gray. The distinguishing feature present at all stages of development is a golden crescent above the eyes, a black saddle on the upper base of the tail and a dark spot on the base of the pectoral fin.

As with most hobbies, the real fun starts when you get past the basics and fishwatching is no exception. When treasure hunting underwater you can only spot the most revered prizes when you know what you're looking for. Happy hunting. 🐠



New Marine Guidebook: Humann Leads Us Into Shallow Water

BY TY SAWYER

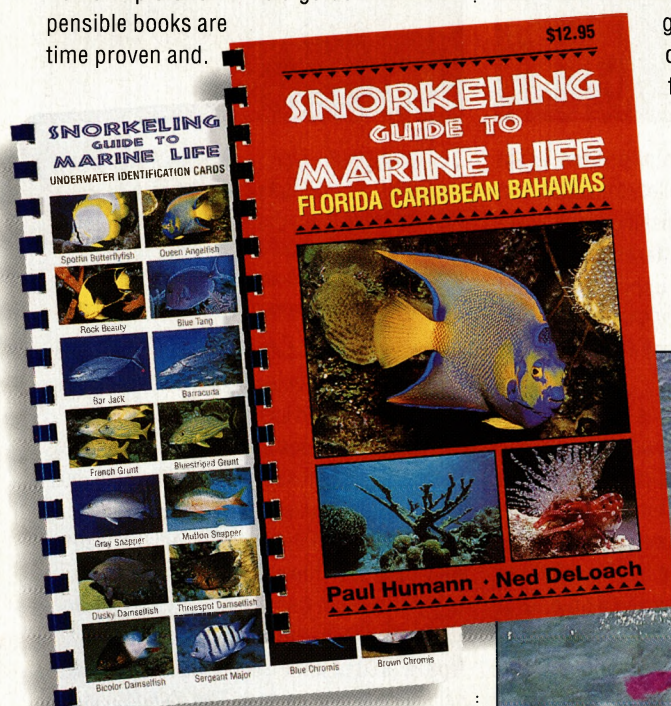
Paul Humann is one of the world's pre-eminent underwater naturalists. Those who are serious or merely curious about marine life identification eventually find their way to the pages of a Paul Humann pictorial ID field guide. His indispensable books are time proven and,

in 1989 with his first book. Suffice it to say, there is no better team to lead you into the shallow water adventureland of snorkeling.

For 32 years Paul Humann has been exploring the waters of the Caribbean, Florida and The Bahamas. If a creature dwells or grows in less than 15 feet of water, you are likely to find an exquisite, easily identifiable photograph and description of it in his latest collection, the Snorkeler's Set. The set includes the ultimate guidebook specifically designed for snorkel-

ers, *Snorkeling Guide to Marine Life: Florida, Caribbean, Bahamas* and the accompanying Snorkeling ID Cards.

Snorkeling Guide to Marine Life: A quick perusal of the pages of this spectacular book reveals a dazzling array of undersea flora and fauna, some quite commonplace and familiar; others compellingly bizarre and otherworldly. Amazingly, all of the 260 displayed species await discovery in shallow coastal waters. The entire family will quickly be able to master this guide. There are big, bold pictures for simple identification and a wealth of information for the seasoned and savvy underwater photographer or naturalist in the family.



inevitably, time worn. His partnership with Ned DeLoach has produced the most comprehensive, easy to use marine photographic reference books available. In fact, he revolutionized marine life identification

Above: The ultimate snorkeler's field guides. If a creature grows or dwells in 15 feet of water or less, you will likely find its photograph and description between these covers.



The chapters are divided into groups. The first ten chapters are devoted to fishlife you might encounter and each is introduced with a general overview of significant habitat and behavioral information, as well as keys to proper identification. Following the introduction are color, full profile photographs. Each fish is described with common name; scientific name; size; specific identification details; and hints for discovery of the more elusive species. The remainder of the book is devoted to invertebrates, the most remarkable, diverse and abundant creatures you will find in the sea. The general description introducing each group is followed by superb photographs identified by common and scientific names. The handy and easy to use Fish Index, found at the front of the book, and the Coral-Invertebrate-Plant Index, found at the end, help snorkelers to almost effortlessly match a name to a face.

Following most Humann books, the nine by six inch, 80 page *Snorkeling Guide to Marine Life* will soon become the seminal pictorial reference book of its kind. Besides being as essential and practical as your mask, snorkel and fins, this rugged book is made to withstand some severe punishment.

The pages are water resistant plastic laminated and the binding is plastic comb.

Snorkeling ID Cards: These are perfect for our instant gratification society. Take these handy reference cards into the water and immediately identify what you see. The thrill of discovery couldn't be easier. With 62 reef fish and 36 corals and other creatures displayed in rich, full color photographs, you will have to spend a lot of time in the water to encounter everything featured. But, nonetheless, you are sure to find many of these, the most commonly encountered shallow water creatures, during your typical snorkeling excursion. Take a nontoxic, erasable marker and circle the marine life as you encounter it so you can tally up your total at the end of the day. As you become more aware and observant in your underwater forays, you will no doubt see a rise in your end of the day count. However, the best advice one can give for creature discovery, and it is repeated in the book, is to slow down and let the reef come alive before your eyes. Adjust to the slower pace of the reef and soon enchanting fish and creatures you may have overlooked 100 times will begin to peep out from their nooks and crannies, as curious about your

presence as you are of theirs.

The two waterproof underwater ID cards are nine by six inches, plastic laminated and secured with a plastic comb binding.

The Snorkeler's Set—*Snorkeling Guide to Marine Life: Florida, Caribbean, Bahamas* and the Snorkeling ID Cards—is available for \$23 at snorkeling retailers and marine bookstores. The set comes in a resealable, heavy duty plastic pouch. The components can also be purchased separately. For more information, contact New World Publications, Inc., 1861 Cornell Road, Jacksonville, FL 32207; (800) 737-6558, fax (904) 731-1188.

Bonaire's Guided Snorkeling Centers

The businesses listed in this section offer specialized services for visiting snorkelers. All of the resorts offer a daily, ongoing program of reef education and fish identification, giving snorkelers a unique experience. All of the Snorkel Tours featured in the Bonaire Guided Snorkeling Program begin with a one-half hour Slide Show followed by a guided tour to some of the Caribbean's finest shallow coral reefs!

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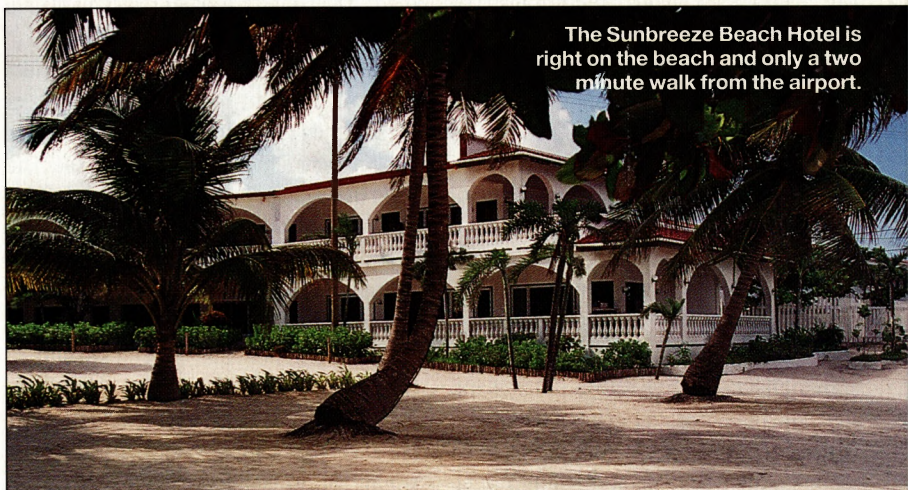
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The most popular dive destination in Belize is Ambergris Caye, the largest of this Central American nation's offshore islands and the easiest to reach after international arrival in Belize City. Throughout the daylight hours, several international carriers, using twin prop aircraft, access this island paradise every half hour. Total flight time is about two and a half hours from the United States.

It's even easier to find one of the best dive operators and dive resorts on Ambergris Caye. Belize Undersea Adventures and the Sunbreeze Hotel are in San Pedro Town, literally steps from the Ambergris Airport. Simply exit the airport and walk toward the beach



The Sunbreeze Beach Hotel is right on the beach and only a two minute walk from the airport.

Sunbreeze Beach Hotel & Belize Undersea Adventures

Ambergris Caye's Dynamic Duo

TEXT AND PHOTOGRAPHY BY RICK FREHSEE



(less than a block). There, at the edge of the sea, is your convenient and friendly island home.

The Sunbreeze Hotel is a lovely white-washed and tiled resort facing the beach and the blue Caribbean. The villa-type structure surrounds a sandy palm strewn courtyard that extends to a dock at the edge of the sea. The hotel's 40 rooms are spacious and com-

fortable. Each room, appointed in handsome island decor, features air-conditioning, cable TV and direct dial telephones. At the end of an oceanfront wing is the Barefoot Bar, a perfect place for happy hour or an evening drink. Adjacent to the bar is the casual, open air Coco Palm Restaurant, offering an array of island, Mexican and international cuisine.



Above: Belize Undersea Adventures' *Flying Manta* dive boat. Far left: A diver hovers over typical reef scenery. There are 25 miles of superb barrier reef drop-offs a mere one-half mile offshore.

Everything at the Sunbreeze is within easy walking distance and that includes the dive shop and dock. Just across the courtyard from your room



Above: The breezy Barefoot Bar is the perfect place for an evening drink. **Left:** Belize Undersea Adventures' dive shop is at the foot of the dock and only a one minute stroll from the Sunbreeze.



is the headquarters of Belize Undersea Adventures: boats, shop and communications center are at the edge of the beach.

This easy access to diving is part of a general plan. Belize Undersea Adventures was designed by Neal Watson, the dive travel expert with successful franchise operations throughout The Bahamas and the Caribbean. Neal understands divers and presents a formula for successful dive vacations. In Belize he has once again combined a good diving environment with easy access, dependable operations, comfortable rooms, good food and a sense of adventure and discovery.

Belize Undersea Adventures utilizes a fleet of boats, depending on the size and objectives of each group of divers. Boats are all mid-sized, ranging from 25 to 36 feet. All vessels are equipped with full safety and communications equipment. The operations center, between beach and dock, offers retail sales, rental gear and a variety of instruction from resort and open water certification through many specialty ratings.

The wisp of foam on the horizon marks the 170 mile long Belize Barrier Reef. This is a part of the Great Maya Reef or Great Western Barrier Reef. Taken in total, this is the longest (and

scientists say, the most prolific) reef system in the entire Western Hemisphere. Belize Undersea Adventures offers boat diving morning and afternoon, accessing at least 40 popular sites. Most boat trips are within 20 minutes of the dock.

There are two types of reef dives available. With an actual 25 miles of barrier reef lying in front of Ambergris Caye,

there are many variations on this theme but the sites can be categorized as either walls or shallow coral gardens.

The wall or drop-off is a constant feature of the buttress zone of the outer reef. The final reef drop occurs at about 80 feet, usually reached through a series of canyons. The deep reef is a series of exaggerated spurs and grooves. The common denominator on most deep sites is fissures, canyons and swim-throughs. This maze presents a discovery dive concept; each turn, nook and cranny features yet another surprise. Highlights include Eagle Rays and huge Barracuda that often hover over the reef. On an Ambergris Caye wall site known as **M and M Caverns**, I once photographed a school of Manta Rays!

The most popular dive destination off Ambergris Caye is a reef cut within the **Hol Chan Marine Park**. Protected from any fishing or collection, this reef channel presents a fish filled coral garden. Some of the resident groupers, angelfish and tame morays may swim right up to your facemask.

The absolute best diving environment available from Ambergris Caye is a trip to the outer atolls. Belize Undersea Adventures also launches trips to two of Belize's incredible offshore atolls as all day or even overnight excursions.

The nearest atoll is the Turneffe Islands, a mangrove and coral paradise that features fish filled vistas. Lighthouse Reef, Belize's largest and most distant atoll, offers some of the most pristine diving in the Caribbean, including the famed **Great Blue Hole** and majestic **Half Moon Caye Wall**. These are unforgettable dive experiences.

A great advantage of Ambergris Caye is San Pedro Town itself, a combination local fishing village and tourist center. Restaurants, lounges, gift shops, etc., abound along the sandy main street that borders the sea.



TACA's Boeing 737 and 767 jet service reaches Belize International Airport daily from U.S. gateways. Three airlines offer twin prop service to Ambergris Caye throughout the day. Packages and travel details are available at Neal Watson's Undersea Adventures in Fort Lauderdale, Florida. Call (800) 327-8150, (954) 462-3400 or fax (954) 462-4100.



Left: Chris McLaughlin, renowned U/W photo pro, with a student at Doctor John. Background: San Salvador is well known for its dazzling walls and superior clarity.



Riding Rock Inn

Wall to Wall Adventure

TEXT AND PHOTOGRAPHY BY WALT STEARNS

As our small plane began a half circle to complete its final approach, my attention was drawn to the view. Below us, the slender band of bright turquoise water encircling San Salvador's coastal contours dramatically changed to a rich deep blue. My first impression was that there were some very diveable walls here!

Scarcely 12 miles long by 5 miles wide, San Salvador Island is actually one of The Bahamas' three land masses: remnants of submerged mountain peaks that rise from the extreme depths of more than 11,000 feet. San Sal is also considered the historical first landfall of Columbus on his momentous discovery of the New

World. San Salvador's second claim to fame is its great wall diving—considered by many to be The Bahamas best walls. The area offers dramatic drop-offs that start in the neighborhood of 40 feet, which are beset by lush communities of coral, colorful sponges and a plenitude of fish. Too bad Columbus didn't have a facemask!

RIDING ROCK INN RESORT AND MARINA

Providing access to this marine splendor is San Sal's oldest dive establishment

(built in 1976), Riding Rock Inn Resort and Marina. Under the ownership of Bahamian businessman James Carter Williams (called Carter) for the past five years, Riding Rock's guests have been treated to that "at home" feeling. The inn has a reputation for providing excellent service, from a host of warm, helpful personnel to its casual setting overlooking the ocean. Upon arrival at San Sal, Riding Rock guests are greeted with a welcome rum punch before departing for the resort. After clearing customs, luggage is gathered and automatically delivered to each guest's room. From here on, dive gear, luggage, etc., is handled for you.

Riding Rock Inn Resort and Marina lines a 500 yard stretch of beachfront just south of Riding Rock Point, on San Salvador's western shore. The accommodations, 45 rooms total, begin with the resort's original, one story complex of 24 rooms—12 facing the freshwater swimming pool; the other 12 facing the ocean. Next door, the newer two story building features 18 deluxe rooms, each with two double beds, telephones, color satellite



Above: The Riding Rock Inn clubhouse. Left: A Queen Angelfish (*Holacanthus ciliaris*) pauses over a sponge, recently munching on by a turtle. Below: One of Guanahani Dive's two 40 foot boats.

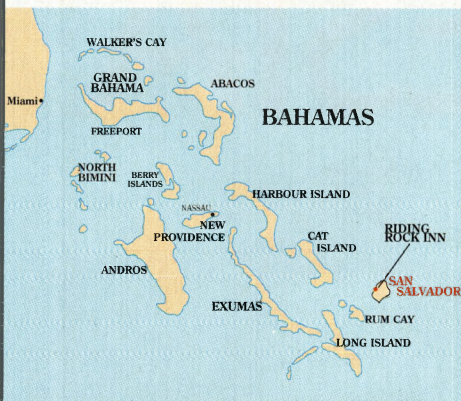


TV and mini refrigerator. Following the walk south toward the tennis courts and marina are the property's six, fully furnished beachfront cottages; three are timeshare units, three are available for rental. There is also a newly acquired two story apartment building that, according to Carter, will provide additional guest lodging when fully renovated.

The name Riding Rock comes from

the accumulation of large rocks that washed up toward shore many years ago, appearing as if they are "riding" upon one another. Overlooking the point and beach is Riding Rock's clubhouse, featuring the resort's dining room (serving an excellent combination of American and Bahamian cuisine) and bar, with a large wooden decked veranda. This is also where the front desk and management nerve center is located.

A few steps farther, past the tennis courts, the walk leads to Riding Rock's scuba center, Guanahani Dive, Ltd., run by veteran guide and scuba instructor, Kevin Collins. One of the two main focal points of the facility is its dive fleet, comprised of two, custom 40 foot twin diesel vessels, the *Guanahani I* and *II*, and a small, 30 foot Island Hopper. Roomy (20 divers maximum) and fast on the water, the *Guanahani I* and *II* are the backbone of the operation, particularly for trips to Sandy Point and French Bay. The Island Hopper is primarily used for scuba course checkout dives or large group overflow. All boats are equipped with full



width stern platforms and heavy duty, aluminum ladders.

The second focal point is the facility's Photo Center, back under the management of world renowned underwater photo pro, Chris McLaughlin. Photographers, pros and beginners alike, will be in good hands. In addition to providing daily E-6 processing and equipment rentals, Chris is an expert instructor and can also videotape your dive vacation. At the end of the day, through most of the week, Chris puts on several slide and video shows. The video portion, composed of the day's shooting, is previewed for guests' pleasure Monday and Tuesday at the resort's Drift Wood Bar.

SANDY POINT AND FRENCH BAY

After the first day (one wall and one shallow dive), all morning trips are double wall dives. The first dive, weather permitting, is customarily around the island's
(Continued on Page 129)

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WESTERN MICRONESIA

TEXT AND PHOTOGRAPHY
BY AL HORNSBY

When divers begin describing their dream dive vacations, there are certain elements that usually make the top of the list—bright tropical sunshine; warm, clear water; profuse coral reefs with clouds of reef tropicals; dramatic wall diving; and big animals such as sharks, mantas and turtles. Well-traveled American divers also include cultural and topside opportunities, as well as the more practical—but important—aspects such as excellent accommodations and air transportation, good food and the convenience of currency, language and electrical outlets that are similar to those they have back home.

The number of dive destinations that can meet this stringent set of requirements is small, indeed. However, there is one location that delivers all this and more; one of diving's recognized wonders of the world, Micronesia.

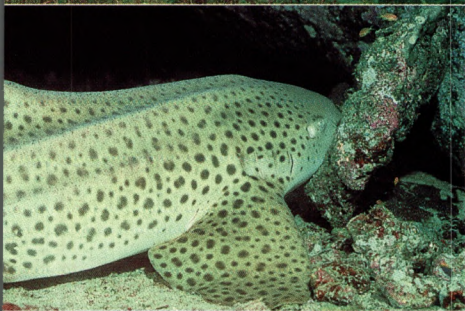
Lying southwest of Hawaii some 6,000 miles from Los Angeles, the scattering of islands that make up

Background: A diver inspects the largest of all bivalves, the giant Tridacna Clam (*Tridacna gigas*). Below: The venomous Lionfish (*Pterois volitans*) is also known by the innocuous moniker of Turkeyfish. Right: Traditional island dancing is practiced at Makiy Village on Yap.



photos/Geri Murphy





Top: An old Spanish bridge near Sella Bay. Middle: A Zebra Shark (*Stegostoma varium*). Background: Descending into Guam's Blue Hole. Inset: Coral Trout.

Micronesia cover some three million square miles. More than 2,100 islands in all, Micronesia is in one of the Pacific Ocean's most life-rich regions. In fact, Micronesia's most dived islands, Guam, Yap and the Palau archipelago, are in the small area where life is thought to have first begun in the ocean. This means more different species and more individuals within each species. In plain terms, this translates to reefs practically filled with marine life of every description.

Divers visiting Guam, Yap and Palau, which are in the most westward part of Micronesia, are fascinated and amazed by what they find, visit after visit. First, there's an incredible natural beauty that satisfies any daydream about a tropical island paradise. Blessed with rich volcanic soil, moderate temperatures that virtually never stray out of the mid 70s to mid 80s (°F), plenty of rain and warm, equatorial sunshine, the islands are gardens only Mother Nature could have designed. Flowers, huge ferns, unusual plants and stands of dense, tropical forest cover the mountainous landscapes in a green cloak. Along brilliant white sand beaches, coconut palms sway gracefully in soft trade winds. Rainfed streams trickle down from the heights, forming lovely waterfalls and eventually creating quiet bays lined with mangroves that are the natural nurseries supporting the region's incredible array of marine life.

In the waters that surround the islands, both in the clear, calm, turquoise lagoons and in the electrifyingly blue ocean outside the fringing and barrier reefs, there is an astounding mixture of reef and pelagic marine life. There's so much that at times it seems it all can't be taken in. The region's estimated 700 species of corals and many thousands of species of tropical invertebrates compete for space on the reef, creating a wild array of colors and shapes. Seastars, crabs, shrimp and anemones inhabit virtually every protected nook and cranny.

With more than 1,000 species

found here, fish seem to practically fill the rich waters. Big fish—sharks, mantas, Napoleon Wrasse and schooling Barracuda—are seen on virtually every dive. And, everywhere, lovely reef tropicals, cloaked in every hue and pattern imaginable, dart this way and that, creating a psychedelic panorama of color and motion, as far as the eye can see.

A trip to Western Micronesia is best done in a 12 to 14 day trip that can conveniently allow diving in Guam, Yap and Palau. Continental Micronesia reaches Guam after a less than eight hour flight from Hawaii, with both early morning and early evening arrivals.

GUAM

A couple of days in Guam provides time to acclimate to a new time zone, get over some jet lag and get the first tastes of Micronesia. Often bypassed by divers anxious to reach the more publicized locations of Yap and Palau, Guam has great nightlife (its Tumon Beach was recently named one of the Pacific's top 10 party beaches) and beautiful sightseeing but it also has exciting diving that can rival better known areas around the world.

Guam's most popular dive is probably the **Blue Hole**. Just off the precipitous cliffline of Orote Point a 20 by 30 foot hole opens in the 60 foot deep, sloping hard coral bottom. It becomes wider as it extends down to 120 feet, where it dramatically spills out into blue water on the steep sides of the hole. Yellow sponges, red seaweeds and gorgonians provide splashes of color in the soft light. Schooling fish—snappers, butterflyfish and jacks—meander through shafts of sunlight that play across the scene.

For wreck divers, Guam has one of the more unusual sites in the world. As a result of Guam's being swept up in both World Wars, two wrecks, the German **SMS Cormoran** from World War I and the Japanese **Tokai Maru** from World War II, lie touching on the 50 to 70 foot bottom of Apra Harbor. The **Cormoran**, a 320 foot auxiliary cruiser, is an open wreck with spacious holds and meandering passageways. Wood planking floors and an antique bathtub remain.

photo/Geni Murphy

WESTERN MICRONESIA



Clouds of fish swirl about, having taken up residence around the quiet hulk.

The *Tokai*, a 500 foot long freighter, is more complex, with jumbled holds and decks. Damage from the torpedo explosion that sank her can

easily be seen at the bow. Shallow enough to be explored in one dive, there are tiled baths and twisting passageways. Resident Fusiliers, jacks and tropicals greet visiting divers, adding life to the ship's somber grave site.

A few miles to the south, just inside Anoe Island, is an especially nice dive spot known as **Coral Gardens**, a maze of coral crevices, small canyons and crevices. Home to many species of reef tropicals, it has groupers, angelfish, schools of rapidly swimming chub, butterflyfish and many lionfish in only 30 to 40 feet of water. For sharp-eyed divers, there are many live seashells, including cowries, cones and spider conchs of several species.

After diving, there's plenty of time

for exploring. The drive to the south for the view of Cocos Island and the mountainous shoreline along the way is splendid. For the more adventurous, a one-half hour hike down to Sella Bay provides lovely scenery, some great snorkeling and the view of a stone bridge built several hundred years ago by Spanish conquerors.

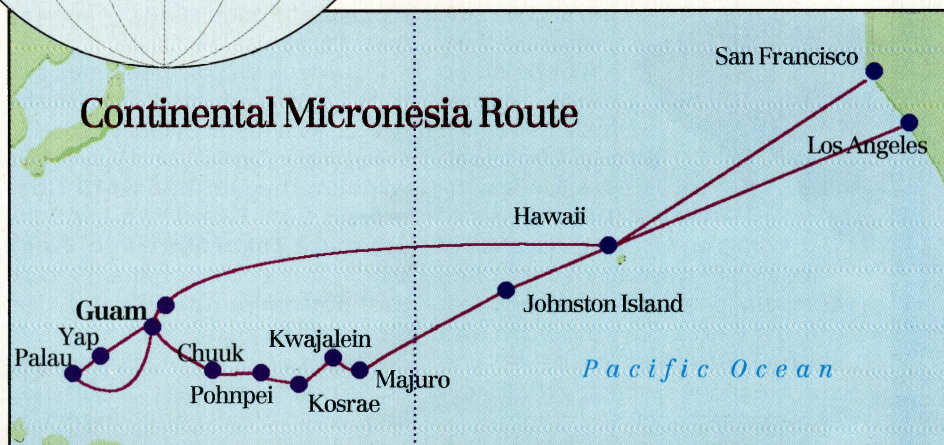
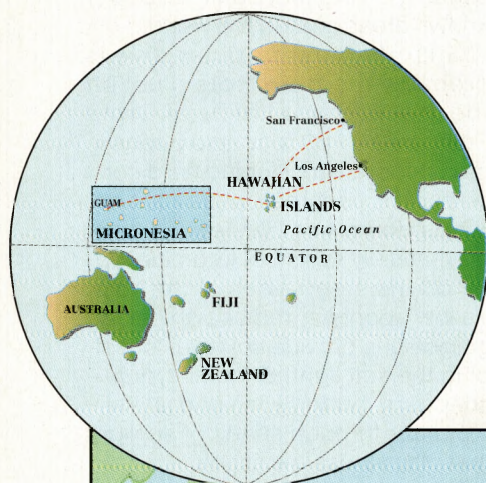
YAP

Departing Guam, the next stop is Yap, an hour and 45 minutes to the southwest. Yap is a striking change from the fast, modern pace of Guam. The Yapese people have preserved the traditional culture with songs, dances, the chewing of betel nut, ruling village chiefs and large stone money, for which Yap is known, still forming the basic fabric of daily life. Their lifestyle and pride in their culture and history create a remarkable opportunity for visitors to experience the essence of the Micronesian spirit. Welcoming friendliness, smiling faces and the obvious contentment of a people comfortable in their home environment seem rare in this modern world. In Yap, however, these are the aspects of life.

Despite its smallness and remote location, Yap has excellent hotel accommodations and dive services. Food is fresh, wholesome and plentiful and there are good communications available to the U.S. mainland.

Yap consists of four hilly islands largely covered with thick jungle. There are many interesting sites, including World War II wreckage, small villages with their collection of large (up to 12 feet high) stone money discs and remote beaches. Especially interesting is the opportunity to view a village's ceremonial dances, where traditional songs and dances are performed by local residents and their lovely children.

The diving is of two types. First, there are many sites along Yap's steep outer reef wall, especially along the north end of the main island. What Yap is most famous for, however, occurs in the south, where schools of mantas congregate in two



WHAT TO WEAR

Micronesia, like most places in the tropics, can expose you to conditions you may not be used to. It's wise to bring appropriate clothing for all the conditions you may face.

From January until the end of May, expect the driest weather. The sun blazes and it's hot. The islands are very casual, so plan on lots of comfortable, cotton clothes such as shorts, tanks and T-shirts. Sunburn protection is a must; bring along a good hat and whatever you like to wear to keep the sun off (as long as it's cool). Be sure to bring some sandals and tennis shoes for hiking.

In the summer months and through December, it can rain—a lot. A light rain slicker and hat are handy but remember, it will still be warm.

In the dry season, water temperatures will be around 82 to 84°F. A 3mm shorty wetsuit will be adequate for most people; some prefer nylon/Lycra skins. During rainy periods, water temperatures will drop slightly and a 3mm jumpsuit will be appreciated (any wind and rain on boat rides can also make it seem colder than it actually is).

large channels. Perhaps nowhere in the world is there a better opportunity to interact closely with these huge, graceful marine creatures.

One of the nicest north wall sites is known as **Yap Caverns**. Here, coral canyons cut down through the

wall, creating twisting tunnels and grottos. Whitetip Reef Sharks are common and clouds of damsels and chromis hover over the entire area. Near the drop-off, which tumbles steeply away into deep, very clear, blue water, schools of jacks sweep in, scattering the reef fish in all directions.

Just up the reef from the caverns is **Lionfish Wall**. The drop-off here is steep—even more than perpendicular in some places. Huge, brownish zoanthids, looking like giant, leathery

coral polyps, cover large areas of the reef face, crowded in among many different types of hard corals. In one small part of the wall a series of shallow overhangs is formed. Under these are numerous lionfish of several different species, including large *volitans* (both black and red color phases) and *antennata*.

Most of the diving off Yap, however, is spent with the island's celebrated mantas. Yap is one of the few places in the world where mantas can be seen in the same

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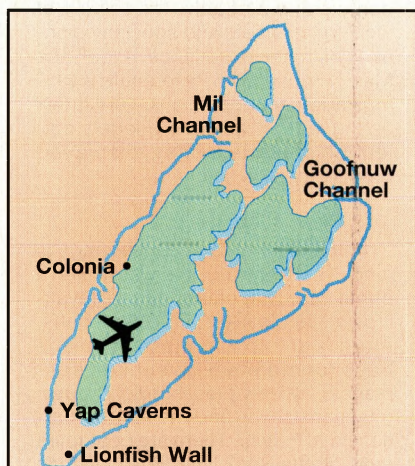


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Lionfish Wall
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WESTERN MICRONESIA

spots—Mil Channel at Manta Ridge and Goofnuw Channel at Valley of the Rays—day after day, almost like clockwork.

In the winter and spring months, dives are at **Manta Ridge**, where the mantas ride in on the morning incoming tide to visit a cleaning station. Divers wait quietly, to avoid any interference with this ancient ritual. The huge mantas, as many as 10 to 12 at a time, each with wingspans up to 12 to 14 feet, glide in and hover along a long, coral prominence in about 40 feet of water. Hundreds of small fish—wrasse, damsels and even butterflyfish—come up to roam over the manta's bodies, going in and out of the mouth and gills,

picking off parasites.

After a few moments, the mantas wheel away, passing just over the divers' heads, providing up-close views and the thrill of a lifetime.

Beginning in May, as the trade winds shift, the mantas move around to Goofnuw Channel to **Valley of the Rays**. Here, a large coral mound rises from the channel's 50 foot deep gravel bottom. Divers kneel along the sides of the mound, motionless as the mantas cruise in, stopping to be cleaned. As they move away, they often approach the divers very closely, with very clear curiosity. At Valley of the Rays, divers occasionally witness a rare and unique sight—that of a school of Gray Reef Sharks being

MICRONESIA TOPSIDE

For most visitors, the lure of Micronesia's fantastic diving is so strong that dive! dive! dive! is all that makes the schedule. However, there is much more to see and do that just shouldn't be missed. The following is a quick checklist of what's available in Guam, Yap and Palau.

GUAM

For beach activities, don't miss Tumon Bay, where you'll find sunbathing, sailboarding, sailing, parasailing, beach volleyball, great food and drink, and dancing to live rock and roll. For hiking and some breathtaking scenery, drive south to visit Talafofo Falls and the old Spanish bridge at Sella Bay. For anglers, the Mahi-mahi, Marlin and Wahoo fishing is excellent. Boats are available out of Agana Harbour and, just down the beach, personal watercraft can be used in the calm waters inside the reef. For shoppers, Guam has some of the largest—and busiest—duty free shops in the world. Downtown Agana features jewelry and gift shops with products from Japan, Korea, China, the Philippines and, of course, Micronesia.

YAP

Yap is smaller than Guam but there's still much to see. Try to visit the bombed WW II lighthouse, communications center and other war artifacts. A must-see is the weekly dance and singing at one of the local villages. The traditional costumes and performances by the village residents are remarkable; the serving of local fruit, sweets and specialty dishes adds to the experience. A look at a Men's House, with its intricate weavings and carvings, is also very interesting, as well as each village's collection of stone money, displayed proudly for all to see.

PALAU

Palau's list of topside offerings is long. There are tours to waterfalls, a burial cave, bat caves, ocean kayaking and jungle hikes. For WW II buffs, there is an old Japanese seaplane base (complete with sunken sea-planes), artillery pieces, a lighthouse, munitions caves and the famous battlefield at Peleliu. There are boat tours through the Rock Islands and fishing excursions for game fish of many types. For shoppers, a visit to the Palau jail is a must. Palau's famous wooden storyboards, expertly carved by jail inmates, tell Palau's traditional legends in great detail. There's also a shell museum and the clam farm, where local marine species are displayed and baby Giant Clams are grown for resettlement on local reefs. If that isn't enough, try a unique trip—a low-level flight over the Rock Islands that will give you memories (and photos) you'll never forget!

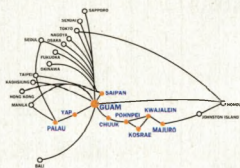


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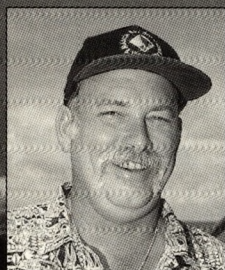
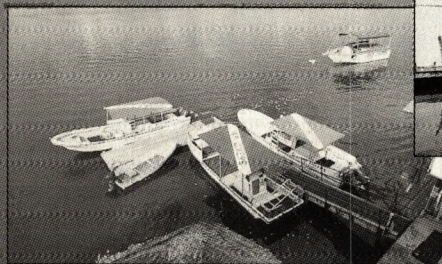
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cleaned. The sharks move in slowly to the mound, then rise to an upright position, rapidly swaying their bodies to maintain what is obviously a very difficult and strange posture. Fearlessly, the swarm of small fish moves in, comfortable that the cleaning signal from the sharks means they may do their work without worry.

PALAU

After Yap, the next stop is Micronesia's crown jewel of diving, Palau. Less than one-half hour farther southwest, Palau is an archipelago of some 340 islands scattered across nearly 400 miles of ocean. The first impression when flying into Palau is truly lovely; as far as the eye can see there are green, jungle-cov-

ered jewel-like islands, bathed in sunshine and scattered across a turquoise and azure sea.

The entire chain is surrounded by a coral reef, through which meander twisting tidal channels. A complex structure of walls, channels and patch reefs inside the huge lagoon is but a hint of the diversity that is underwater Palau.

There are many topside activities available in Palau, including relaxing on the beach or doing a bit of exploring. Several local dive operators

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offer ocean kayak rentals for peaceful journeys among the Rock Islands. The main town of Koror has shopping (especially interesting are Palau's intricately carved storyboards), shell collections and a museum. A visit to the clam farm—

where Giant Clams are raised before being reseeded back onto the reefs—gives a chance to see a number of tank-housed species of local fish and turtles up-close.

Palau has an excellent selection of many hotels and resorts, from the economical to the luxurious, as well as several excellent live-aboards.

There are also a number of beautiful scenic tours available, some taking one-half day and others being full day affairs. To the north of Koror, the island of Babelthuap has beautiful

waterfalls and a World War II Japanese seaplane base, housed inside a huge cavern.

Near Koror, on Ngeruktabel Island, a hike to the German lighthouse reveals an amazing array of World War II wreckage; cannons, bunkers, supply caves and wrecked buildings. Nearby, there's a sea cavern that was used, in ancient times, as a burial cave. Thousands of pieces of human bones lie scattered across the cavern floor and glistening stalactites hang from the

WESTERN MICRONESIA

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011 (671) 477-2775 (fax)

Micronesia Divers Association

Pete Peterson

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011 (671) 477-6329 (fax)

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011 (691) 350-4567 (fax)

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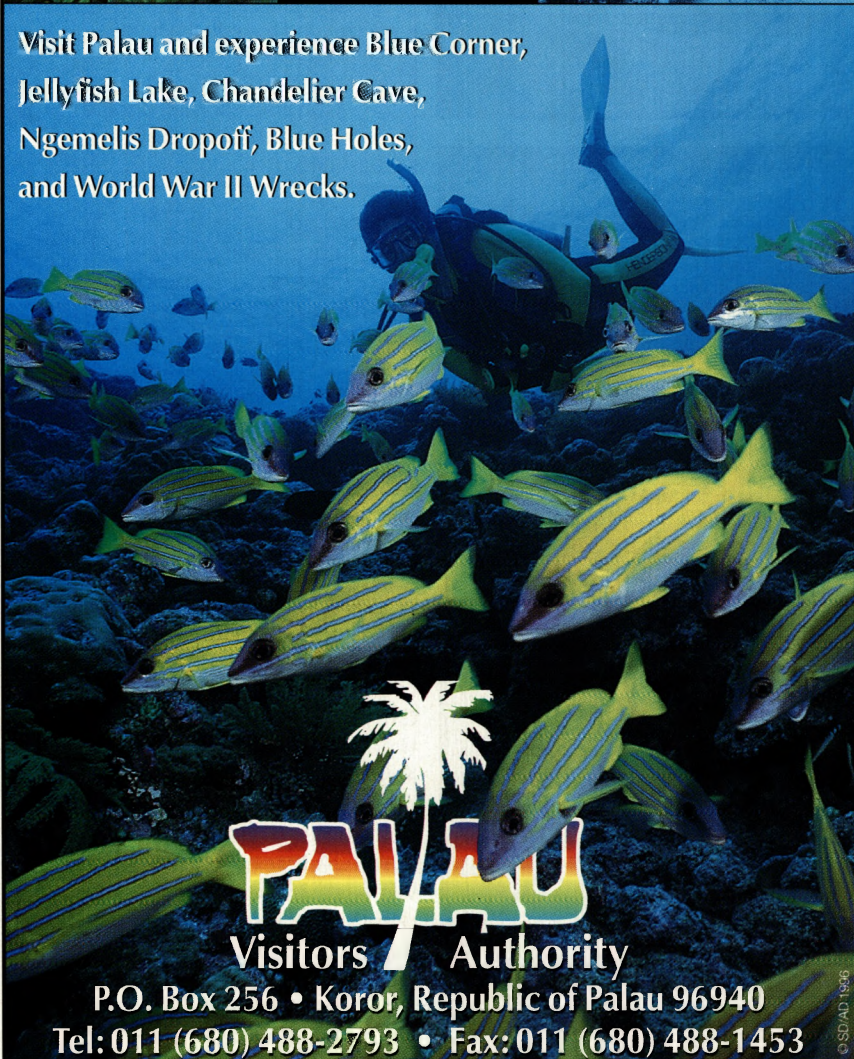
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WESTERN MICRONESIA

CONTINENTAL MICRONESIA

International and domestic travel within Micronesia can be arranged through Continental Airlines and its subsidiary, Continental Micronesia.



Flights to Western Micronesia depart Los Angeles and San Francisco daily. All flights change planes in both Guam and Hawaii; the total in-flight time is about 15 hours.

Continental Micronesia
(800) 231-0856

Palau's original great dive site is **Big Drop-off**, on Ngemelis Wall. Inside a large channel, this dive is along a steep, overgrown wall of hard corals, soft corals and huge gorgonian fans. Thick with tropical fish, the dive is a leisurely drift with the current, covering miles of breathtaking scenery. Whitetip Reef Sharks patrol the top edge of the wall and turtles are often seen, cruising by in deeper water.

Next, it's onto the **Blue Holes**. Atop the flat, fringing reef just up from Blue Corner, large, irregularly-shaped holes bore down through the coral. Divers drop down into the soft, blue light; sunbeams scatter through adjacent tunnels and passageways. At 90 feet, framed by

dark ceiling.

In Palau, however, it's the diving that receives the most attention. Palau is regarded as one of the world's most exciting and prolific diving areas and it lives up to every bit of that reputation. There are so many dive spots to choose from that divers could dive a different site every day for months, with never a repeat.

The best known dive is **Blue Corner**, Palau's favorite spot for more than 20 years. At the top of a steep wall, in only 45 feet of water, divers wait in the brisk current. Just more than an arm's length away, Gray Reef Sharks cruise the wall. At times there are 10, 20, 30 of them. A school of Blackfin Barracuda circles overhead, their silhouettes creating a huge, dark ring in the bright water. A three-foot long Napoleon Wrasse, very accustomed to visiting divers, comes close to stare with a large rolling eye. Blue Corner is a place that can be dived over and over—its predictability is only that it will be exciting!

MICRONESIA TRAVEL AGENTS

For more information on Western Micronesia or to book dive travel to Guam, Yap or Palau, contact any of the companies listed below:

Adventure Express
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(415) 442-0289 (fax)

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DRIFT DIVING

Many of Micronesia's top dive sites, especially off Yap and Palau, are in areas where nutrient rich currents sweep past reefs and walls. Whether near tidal channels or at the ends of islands where water patterns converge, the result is a congregation of marine life species and exciting feeding activity.

The currents circulate oxygen and organic matter, which give rise to large numbers of corals, sponges, gorgonians and other sessile organisms that pluck their food from the water as it sweeps by. Additionally, schools of small fish are attracted to the same nutrition sources. This, of course, brings in packs of predators such as jacks, Barracuda and sharks, each feeding on the next level down the food chain.

For divers, these areas are the most impressive, not only for the sheer numbers of marine animals but also for the activity—eating and being eaten is definitely *not* a lethargic process in the ocean!

For those who have not dived in such currents before, the first time may be a bit intimidating. In reality, drift diving, as it is called, is actually less strenuous than diving from an anchored boat or shore, where a return trip must be made to the starting point of the dive.

While orientation or training in any new diving activity is always recommended, a few simple tips can help make drift diving experiences easier, safer and more enjoyable. First, since the boat will be following you as you drift, it's important to listen carefully to the divemaster's instructions. All operations don't conduct drift dives in the same manner; following the procedures carefully will prevent separation from the boat.

Staying close to your buddy or to the group, depending upon how the dive is conducted, is even more important while drift diving. If currents are swift, getting separated can happen quickly. Good buoyancy control skills are valuable as well.

Finally, it's wise to carry some sort of surface audio or visual signaling device, such as a Safety Sausage, a diver's flag or miniature air horn. In fact, some dive operators supply these devices to their divers.

In Palau, there's a unique approach to conducting a stationary dive, even in a strong current. At Blue Corner, one of Palau's most exciting dives, the shark and other big fish action happens at one spot on the wall. With currents often too strong to swim against, the dive operators have come up with an interesting solution—the reef hook.

A large metal hook is attached to a short line, which is attached to the BC. To remain in one spot, you merely locate an area on top of the wall that is not live coral, snag the hook onto the bottom and relax, letting the dramatic action of Blue Corner unfold before your eyes.

gorgonian fans and Black Coral bushes, the grotto opens out onto a sheer wall—a beautiful, surreal dive site like no other. Just outside the opening, to the south, a circular coral arch provides a unique photographic scene.

Palau's newest and most exciting dive is **Peleliu Corner**, off the southern tip of Peleliu Island. Increasingly becoming standard to most dive operators' itineraries, the spot is Palau excitement at its best. A steep, rough wall, cut with canyons and grottos, drops dizzily from 45 feet to deep water. The current brings nutrients to the wall's sessile inhabitants and gorgonians, soft corals, seaweeds and huge Black Coral bushes grow thickly across the face. Big groupers are resident and large Wahoo, Dog-tooth Tuna, Black Jacks and other oceanic predators are numerous. Sharks are everywhere; often as many as 20 to 30 at a time are in view, as they ceaselessly patrol the wall's edge. On the corner's far side, **Yellow Wall** is an area of the drop-off completely covered with beautiful yellow

sponges and Cup Corals.

After a day on the reef, the return boat ride provides another of Palau's special dives—**Jellyfish Lake**. A short hike up a jungle hillside reveals a lake, trapped in the middle of the island when the reefs that formed these islands were uplifted eons ago. In the lake are *Mastigias* jellyfish, which, through the process of evolution, have lost their ability to sting. Now, in a huge school numbering an estimated two million individuals, the jellyfish follow the sun around the lake; the algae growing inside their bodies producing food. Divers swim through their pulsing swarm, experiencing one of the world's most unique wonders.

Micronesia, with its combination of natural beauty, cultural experiences, World War II memorabilia and, of course, incredible diving, provides a unique opportunity for traveling divers. It's also one of those rare destinations with that perfect combination of the exotic, the remote and the familiar. It's a place like no other; it's a dive trip that no diver should have to miss: it's Micronesia—simply unforgettable. 🐠



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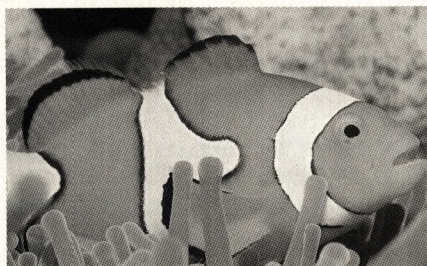


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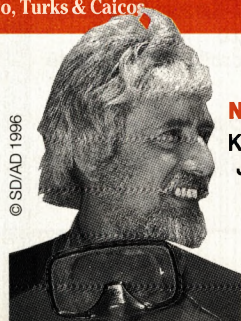
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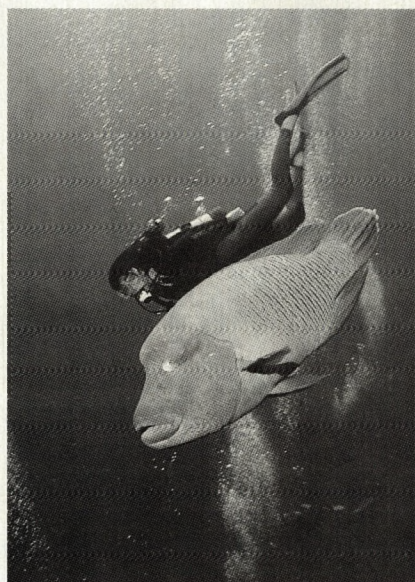
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Divers pass the time in style on the *Manta*'s sundeck. Inset below: Gorgonians, tube sponges, star and plate corals thrive on Fantasy Island's deep wall.

All dive trips are an adventure; some are just more exciting than others. Although the ocean can surprise you anywhere, the best potential for discovery is usually the out of the way spots. That's where *Manta*, Sunset Divers' superb dive boat, was built to go.

Six years ago, owner Adrien Briggs and the Sunset House dive staff set out to design a boat that could explore the far corners of Grand Cayman, a boat that could cover a lot of ground quickly and in great style. As they considered what features to include, the main question was always "What works best for divers?" Breaux's Bay Craft in Louisiana crafted its ideas for the ultimate dive boat into a 45 foot aluminum catamaran with a 19 foot beam. Water entry is easy from an open, step down transom leading to a

GRAND CAYMAN'S Sunset Divers

Exploring
the
East End
Aboard
the *Manta*

TEXT AND PHOTOGRAPHY
BY BILL HARRIGAN

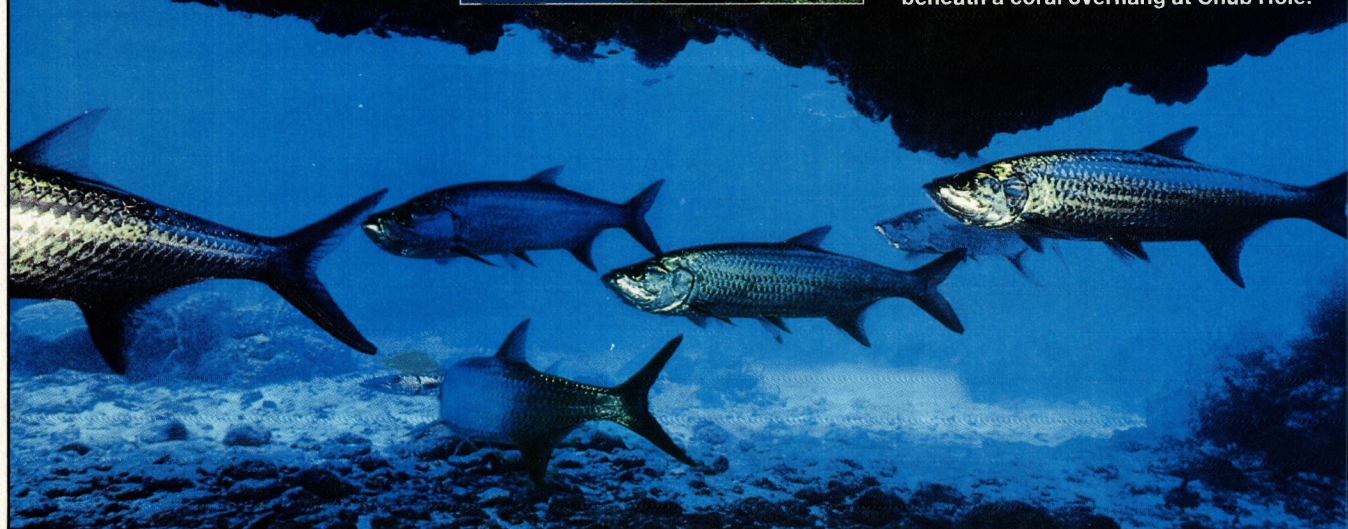


water level dive platform with walk-around room. Railings are right where you need them. Two showers pump volumes of fresh water. Three camera rinse tanks keep equipment from becoming crushed at the bottom of the barrel. The dining area, dive deck and topside sundeck provide a choice of places to relax or prepare dive equipment.

EAST END ADVENTURE

The East End Adventure starts with a 7:45 am bus ride from Sunset House to the *Manta*'s slip. After idling out through the shallows, *Manta* accelerates with impressive speed, thrust ahead by twin 500 hp turbo diesels. We

Below: A school of Tarpon gleam from beneath a coral overhang at Chub Hole.



zip across North Sound, through Rum Point Channel and turn east past the other dive boats gathering on the North Wall. At 22 knots, *Manta*'s wake is like a solitary white arrow across the deep blue water. As we dangle our legs over the bow, schools of Flying Fish erupt from the water and zoom away on silver wings, almost touching our feet.

Fantasy Island is our first stop. Captain Kevin Dobbs' briefing gives us a hint of what marine life we might see and details the practical aspects of the dive. For safety we are asked to limit our depth to 105 feet, keep at least five minutes of no deco time showing on our computers, avoid sawtooth profiles and make a five minute safety stop. Kevin and instructor Brian Nicol dive with us, acting as guides or safety divers, depending on our requests. Fantasy Island is a series of coral fingers and a pinnacle, with the top edge at about 70 feet. As we cruise along, enjoying the Deep Water Seafans and Leathery Barrel Sponges at 100 feet, a Spotted Eagle Ray passes close overhead.

After the dive we shower and dig into a platter of fresh fruit while Kevin points *Manta* eastward again. This time we go all the way to the southeast corner of the island before we stop for a "mystery dive" between previously discovered sites. With the anchor carefully placed in a sand pocket, we jump in to explore a reef of big, healthy mounds of Star and Brain Coral growing on high coral fingers. The convoluted wall provides several narrow, winding swim-throughs.

We retrace our course north and take advantage of the unusually flat water to tie up at **Chub Hole**. Brian's culinary background is obvious as he prepares our lunch of fresh green salad, French bread sandwiches, potato salad and apple pie. After a two hour surface interval we are ready for the third dive, which proves very different from other Grand Cayman sites. Elkhorn Coral grows on top of the coral fingers and ravines lead down to the sand at about 50 feet. There are lots of arches, caverns and swim-throughs to explore, most with groups of silvery Tarpon gathered at the entrance like sentries. After a smooth return ride, we are back at the dock by 4:30 pm and the bus is already waiting.

Manta excursions are scheduled three times a week, on Mondays, Thursdays and Saturdays. Computers are required in order to get the most out of the multi-level, repetitive diving the East End offers. Rental computers are available, complete with a free computer safety course.

SUNSET HOUSE

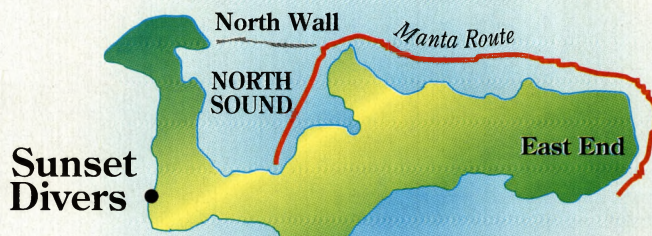
Sunset House is the sort of place that invites you to move in and adopt it as



Above: Instructor Shane Revitt and alternate captain Simon Rycroft at the helm of the *Manta*. Top right: One of Sunset House's brightly lit, comfortable rooms. Right: A guest basks in the hottub while enjoying the view from Sunset House.



Left: Sunset Diver's *Manta* was designed to explore the remote regions of Grand Cayman's East End. The 45 foot aluminum catamaran has a large water level dive platform, two showers, camera rinse tanks, dining area, dive and sundecks.



GRAND CAYMAN British West Indies



your own. The rooms are light and comfortable, with oversized double glass doors looking out to tropical gardens or the sharp blue line of the ocean horizon. The Seaharvest restaurant serves a wide range of entrees and offers a choice of air-conditioned inside seating or romantic waterfront terrace dining. My Bar is a friendly place with a spacious deck, the tropic island equiv-

alent of Cheers, blessed with a perfect view of every sunset.

Manta trips are perfect for photography or video and Cathy Church's Underwater Photo Centre only charges one-half day rates for Nikonos and video rentals for *Manta* divers. Video camera rentals come with easy instructions and Cathy's famous money back guarantee. If you don't like the video, leave the cassette and get a full refund.

Travel to Grand Cayman is quick and easy on one of Cayman Airways' non-stop flights from Miami, Houston, Orlando, Atlanta and Tampa. Casual is the rule on Grand Cayman, so pack light. For more information, contact Sunset House at (800) 854-4767. 🐠



Bahamas Bound for Adventure



Above: A bird's eye view of the *Pirate's Lady* shows the sloop rig, which spreads 1,800 square feet of sail, and the expansive deck area. Top inset: Joel Hickerson climbs aboard, ecstatic from his dive. Right inset: Rope sponges and corals at Lunkhead, south of Bimini, enthrall Megan McCaslin.



Pirate's Lady prowls the waters south of Bimini in search of underwater treasures.

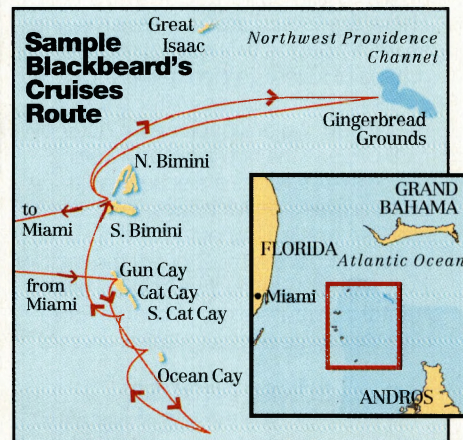
My dive partner tapped me lightly on the shoulder and I looked up to see a Great Hammerhead Shark. Sleek, powerful and majestic, it cruised slowly by us, the distinctive flattened head and tall dorsal fin plainly visible. A pack of anxious jacks followed the shark like a procession of attendants trailing royalty. While watching the shark fade into the distance, we saw a Hawksbill Turtle swimming over the reef toward us. To our surprise it seemed intent on joining us for awhile. It swam between us several times, circling around and giving us a good look at its hooked beak and amber colored carapace. We followed each other among the coral mounds for about five minutes before the turtle paddled away. Over the next ridge we discovered a large Nurse Shark, searching for lobsters or crabs in the sandy crevices along the edge of the reef. Intent on its hunt for food, the shark allowed us to approach within a few feet.

Back on *Pirate's Lady*, other divers were reliving the experience with words and excited gestures, having also seen the ham-

Blackbeard's Cruises

TEXT AND PHOTOGRAPHY
BY BILL HARRIGAN

merhead and the turtle. It was only our second dive on this Bahamas adventure and we were already into the action! Our boat was one of three virtually identical custom sloops operated by Blackbeard's Cruises. Named *Pirate's Lady*, *Morning Star* and *Sea Explorer*, they are 65 feet long and carry 1,800 square feet of sail. Capable cruisers under both power and sail, they are fully air-conditioned and set up for easy diving. Each boat is fitted with a high capacity air compressor to fill tanks quickly.



Where were we on our Bahamas adventure? The itinerary of every Blackbeard's Cruise is different. The captains take their pick from an enormous cruising area, depending on the weather, their own experience and the preferences of the passengers. In the northern section there are Grand Bahama, West End and the Gingerbread Grounds. More southerly are Bimini and the line of islands extending to Orange Cay. Farther east are the Berry Islands, Andros and Nassau.

Ron McCaslin, captain of *Pirate's Lady*, pointed us first to Cat Cay and the line of islands south of Bimini, planning to work north to the Gingerbread Grounds. Ron is a nine year veteran of The Bahamas, half of that time with Blackbeard's. His skilled seamanship and easygoing personality make him a superb captain. Steve Clark is the first mate on *Pirate's Lady* and is also fully qualified to act as captain. Into his second year with Blackbeard's, Steve is another reason people keep coming back. Engineer Kevin McAllister is a Diver Medical Technician in addition to being a qualified NAUI instructor. Katie Thoma has been cooking great meals aboard *Pirate's Lady* for about a year and she turns out the most amazing spreads from that galley. Alastar Brown, a PADI instructor from Northern Ireland, recently joined the *Pirate's Lady* as divemaster.

WHAT TO EXPECT

The number one attraction of Blackbeard's Cruises, of course, is lots of great diving. Three dives a day are planned, along with three night dives each trip, a schedule that usually allows for a total of 18 dives per cruise. The diving includes a wide variety of sites, from deep walls and shallow reefs to wrecks. Water temperatures are bathing suit warm (around 85°F) in the summer and just cool enough for a shorty or light wet-suit in the winter (about 77°F). Visibility is normally in the 60 to 100 foot range, although it can be higher or lower under some weather conditions.

An equal part of the Blackbeard's experience, though, is the camaraderie. People come away from cruises with friendships that last a lifetime. You get to know your fellow pirates quickly, perhaps because there is a strong sense of shared adventure that makes doing things together fun.

Expect to eat well. From a small galley, Blackbeard's cooks produce a lot of delicious food. Katie baked fresh cakes, cookies and brownies for dessert in addition to turning out sumptuous meals. Like all Blackbeard's chefs, Katie also had no difficulty handling special dietary requests. If you somehow have room for more food between meals, there is always a basket of fruit and a dish of candy in the salon.

(Continued on Page 130)

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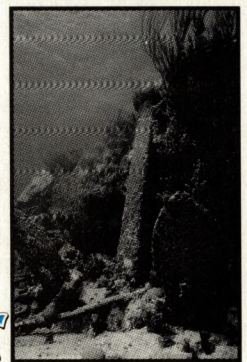
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for Diving**



TEXT AND PHOTOGRAPHY BY GERI MURPHY

The Guanacaste Region of Costa Rica's Pacific Coast has become diving's newest hot spot for Central America undersea adventure. Few places in the Western Hemisphere can match the enormous amount of fish activity found among the rocky islets and undersea pinnacles off this rugged, undeveloped coastline.

The Guanacaste Region is in the northwest part of the country, approximately 120 miles from Costa Rica's international airport and capital city of San Jose. You can reach the area in four hours by car (or bus) or 30 minutes by commuter plane to Liberia airport. The coastline is wild, rugged and relatively undeveloped. Much of it will never be developed, as it has been declared a national park and wildlife refuge.

Guanacaste is best known for its spectacular marine life, both in abundance and diversity. Schools of 1,000

to 5,000 fish are encountered at almost every dive site and on a daily basis. Reef fish species are a blend of Pacific Coast and tropical Pacific varieties never seen in Caribbean waters—plus many familiar Caribbean species. It is not uncommon to encounter an orange frogfish, a Banded Guitarfish, Cortez Angelfish and several Whitetip Reef Sharks on the same dive. Big animals encountered by divers include Giant Manta Rays, several species of sharks, several species of turtles, Eagle Rays, giant Jewfish and Whale Sharks. Underwater photographers find this region a treasure house of photo opportunities that include an impressive array of moray eel species, such as the Snowflake, Jeweled, Whitemouth, Zebra and many others.

The water temperature is variable, ranging from 86°F in the summer to 74°F in the winter. What makes this area

fascinating is the unpredictable currents and upwellings that can cause a five degree shift in temperature during the same dive. Thermoclines often occur at the 80 to 100 foot zone.

Underwater visibility is equally variable, ranging from 30 to 100 feet, depending upon location, tides and those same unpredictable currents. Divers often experience crystal clear conditions on one side of the reef or rock pinnacle; low visibility on the other. The nutrient rich waters that attract the immense quantity of marine life also contribute to the lower visibility.

There are approximately 50 different dive sites along the 75 miles of rugged coastline that rim the Gulf of Papagayo. The majority of these inshore dive sites are clustered around Playa del Coco—an easy 10 to 30 minute boat ride. They include such popular sites as **Virador**, **Punta Gorda**, **Scorpion Place**, **Shark**



Facing page: An endless school of grunts disappears into sparkling blue water. Costa Rica, diving's newest hot spot for underwater photographers and adventurers, has a spectacular abundance and diversity of sealife.

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One of the best areas for offshore adventure diving is the **Bat Islands**, at the very northern end of the Gulf of Papagayo. This cluster of islands and rocky pinnacles is part of Santa Rosa National Park and thus protected. Dive sites at this location include **Sailfish Rock, The Arches, Octopus Garden, Amberjack Rock, The Pyramid** and **Pez Vela**. The most exciting dive in this region is **Big Scare**, where divers can encounter and observe a school of Pacific Bull Sharks.

Another offshore location that offers high adventure and superior visibility is **The Catalinas**, a cluster of small rock islands and pinnacles at the south end of the Gulf of Papagayo, close to Flamingo Beach. Underwater visibility in this region frequently exceeds 100 feet and divers may encounter schools of Bat Rays, snoozing Whitetip Reef Sharks, giant Southern Stingrays and mantas. Dive sites among **The Catalinas** include **Twin Starfish, Catalina Drift,**

Big Cupcake, Little Cupcake, Turtle Rock and The Ridge.

Owing to the emerging popularity of the Guanacaste Region, this area has at least six well equipped, professional dive operations. All have excellent dive boats, experienced dive guides and certified instructors. The dive center owners, managers and staff all speak English and dives are conducted according to American safety standards.

The Guanacaste Region is just one of Costa Rica's many different areas for diving exploration. Perhaps the best known is Cocos, a solitary mid-ocean island some 360 miles off the Pacific Coast. This high adventure location is exclusively accessed by three live-aboard vessels—*Okeanos Aggressor*, *Undersea Hunter* and *Sea Hunter*. Cocos is best known for its magnificent schools of Scalloped Hammerhead Sharks, Giant Manta Rays, Sailfish, Whale Sharks and whales.

The Nicoya Peninsula, off Costa Rica's Central Pacific region, offers a gentle blend of recreational diving with other

COSTA RICA'S Guanacaste Region

For more information about diving and diving vacations in the Guanacaste Region, contact the following:

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(800) 525-3833

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outdoor activities such as golf and tennis. This region is particularly popular for all-inclusive resorts such as Playa Tambor Beach.

The Osa Peninsula, off Costa Rica's southwest coast, provides a more natural setting, with a great many eco-attractions such as rain forest exploration, river rafting and kayaking. For divers, the most exciting attraction is Cano, a beautiful offshore island with a magnificent reef and a multitude of marine life.

Costa Rica is by no means limited to just diving. This magnificent Central American country has long been a favorite with outdoor enthusiasts interested in adventure tours (see our sidebar).

Costa Rica offers incredible diversity of both geography and wildlife. It is the land of 1,000 adventures, both above and below the surface.

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Sea Stings

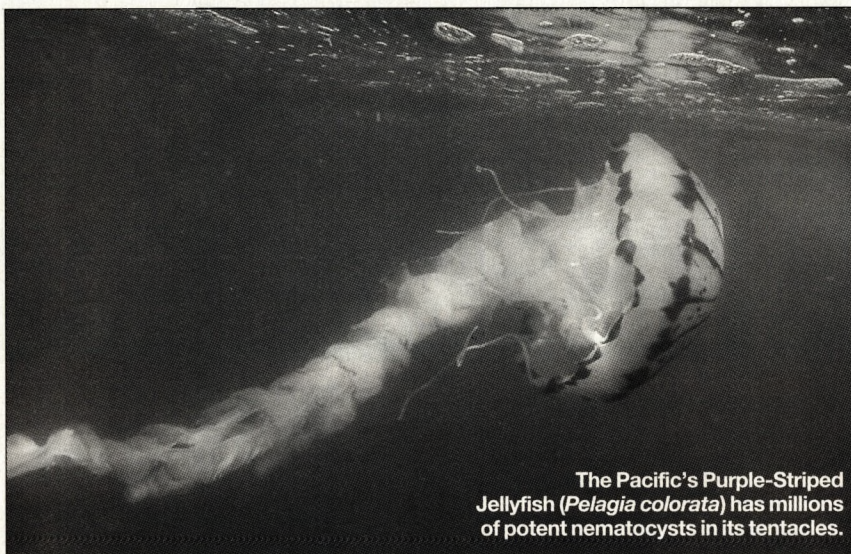
BY FRED BOVE, M.D., PH.D.

Divers come in contact with many types of stinging sea animals. In the South Pacific, some of these animals can be dangerous. Along Australia's Queensland Coast for instance, there is the Sea Wasp (*Chironex fleckeri*), a dangerous jellyfish that can kill those who contact it.

NEMATOCYSTS

All stinging jellyfish, corals and marine animals can release millions of capsules called nematocysts. These small structures contain a "dart" with a toxin that is released when the nematocyst is stimulated. Contact with a jellyfish tentacle causes many millions of nematocysts to be deposited on the skin. They are not all stimulated to inject the dart at the same time. Many nematocysts remain on the

(Continued on Page 132)



The Pacific's Purple-Striped Jellyfish (*Pelagia colorata*) has millions of potent nematocysts in its tentacles.

photo/Bonnie J. Cardone

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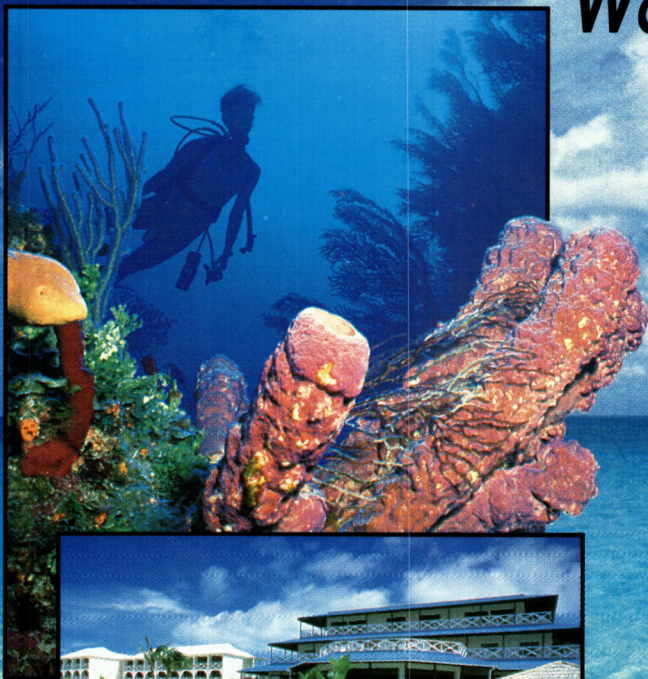
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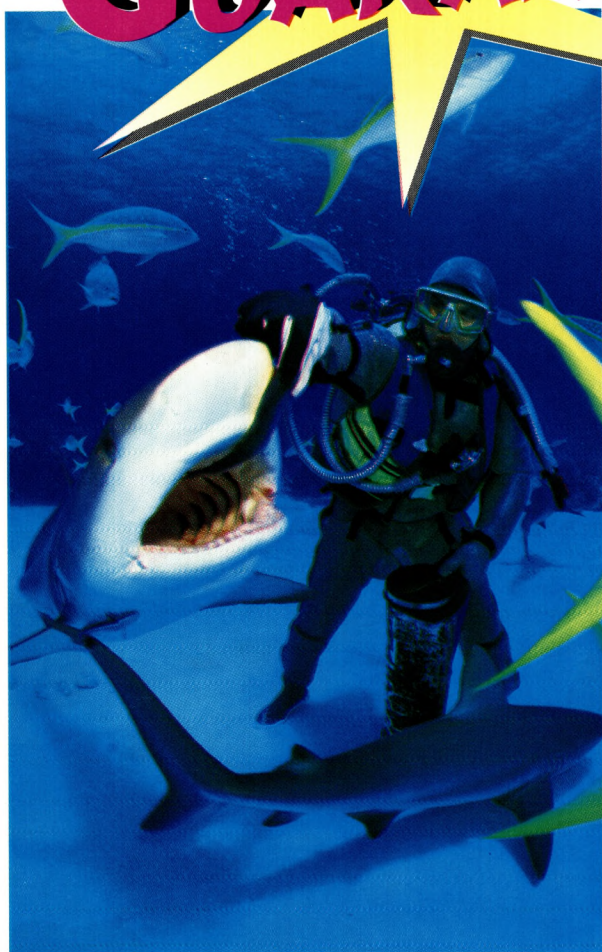
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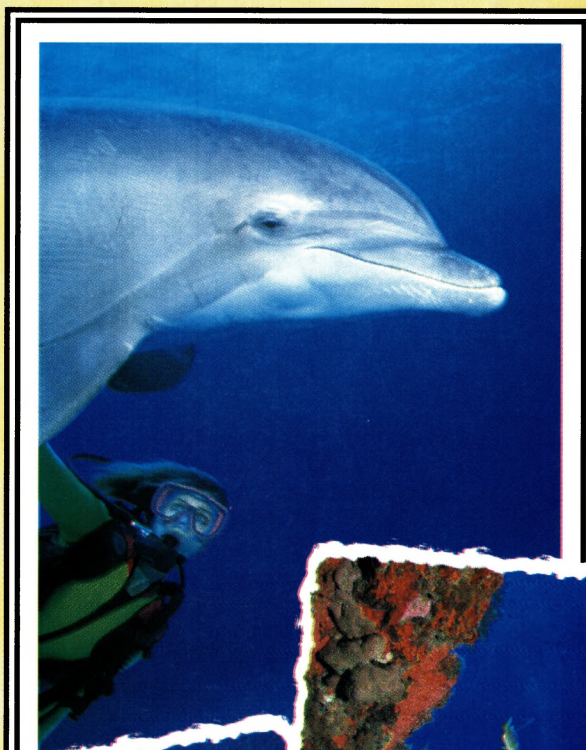
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While experienced divers thrill to dives like these, UNEXSO offers complete programs for the beginning diver as well, including a full range of specialty courses, PADI and NAUI certification programs, and referrals. Enjoy a world of tropical dive adventure with those who do it best... the Underwater Explorers Society!

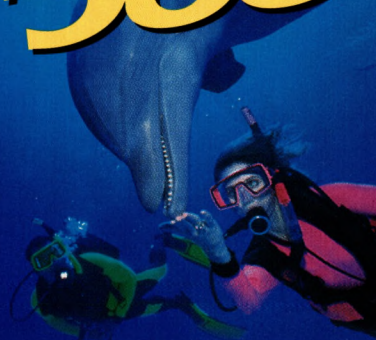


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Ride the sea horses down tree-lined trails to a deserted beach where you are free to gallop along the sand and surf.

Paddle sea kayaks through mangrove creeks, take in wildlife, and enjoy a picnic lunch on an island beach.

Our island boasts three 18-hole USGA-rated championship golf courses. Lush and well manicured, these public courses ensure ideal golfing conditions year-round.

The Dolphin Experience offers a "Close Encounter" perfect for the whole family. Take a short boat ride to Sanctuary Bay. Learn about, and even touch these dolphins, as you wade in waist-deep water.

Go for a ride in the DeepStar submarine that will give you a spectacular view of our seascape.

Relaxing is also encouraged.

In our outdoor shopping plazas and markets, you will find everything from fine jewelry and china to duty-free liquor and exotic perfumes. In the International Bazaar, stroll through colorful archways along cobblestone paths that lead to quaint and cozy restaurants and shops representing countries from around the globe.

Port Lucaya Marketplace is in a picturesque waterfront setting, with live entertainment and dancing nightly in the main square. Boat lovers will glimpse the impressive array of luxurious yachts anchored there.

Stroll all of the native straw markets located throughout Freeport and Lucaya!

If you are looking to play craps, blackjack, roulette or mini-baccarat, you'll find it all at the Princess and the Lucayan Casinos.

Our natural wonders make our island a fascinating place to explore. At Lucayan National Park there is a rustic wooden boardwalk where you can walk over a mangrove creek to a magnificent unspoiled beach. Ride in an open jeep to inland blue holes, prehistoric caverns and deserted beaches.

From the east end to the west end, you will find the Grand Bahamians to be genuinely warm and friendly. They are always eager to offer you advice, whether you need directions to a remote beach or are trying to find the best conch salad on the island!

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Dive Notes

FLUORESCENT CABLE TIES: Nelco Products, Inc., of Norwell, Massachusetts, has a new line of cable ties that are available in bright fluorescent colors for a variety of applications, from color coding to personal identification.

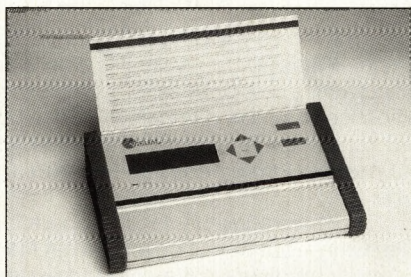
Nelco Fluorescent Cable Ties are made from durable type 66 nylon and are avail-



able in bright blue, orange, yellow, pink and green. Highly visible on land or underwater, they come in 4 to 14 inch lengths.

For more information, contact Nelco Products, Inc., Patricia Drummond, Marketing, 77 Accord Park Drive, Norwell, MA 02061, (800) 346-3526, (617) 871-3115 or fax (617) 871-3117. 🐠

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In addition to cylinder neck inspections, Visual Plus comes with computer software that enables inspectors to maintain a database of inspections and generate printed reports for customers. For more information or for a free demonstration video, call AIT at (909) 369-0945, fax (909) 369-7313 or e-mail visualplus@aol.com. 🐠

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SKIN DIVER NOVEMBER 1996 117



Utila's Laguna Beach Resort



Luxurious Divers' Hideaway in The Bay Islands

TEXT AND PHOTOGRAPHY
BY RICK FREHSEE

Warm wood, white sand, green palms, golden reefs, emerald waters, turquoise sky. These, plus excellent food and comfortable accommodations—all the colors and ambiance necessary for a memorable tropical diving holiday—are available at one of the Bay Islands' newest dive resorts.

On pretty Utila Island, Laguna Beach Resort officially opened on February 3 of this year. It is owned and managed by Troy Bodden, a Utilan with 10 years in dive business management and well-versed in North American dive travel.

The smallest of the three major Bay Islands and the closest to the mainland of Honduras (19 miles offshore), Utila is an island in transition. In just a few short years it



Top: The sun streams through Utila's crystalline water, silhouetting a diver exploring Blackish Point's coral wonderland. **Middle:** Laguna Beach Resort's mainhouse. **Above:** The lodge's custom 36 foot dive boat.

has moved from relative obscurity (at least in the eyes of U.S. travelers) to a bona fide and active dive destination. This is in response to sizable numbers of divers, both European and American, who are seeking a personal dive paradise and finding it here.

There are currently 18 dive operations on Utila—but not all provide what North American divers have come to expect. However, for the past six years, Utila Watersports, headquartered in downtown East Harbour, has provided comfortable and professional dive tours and trained thousands of divers.

The Laguna Beach Resort is one mile west of town, just a short boat ride but a universe away in feeling. The property is

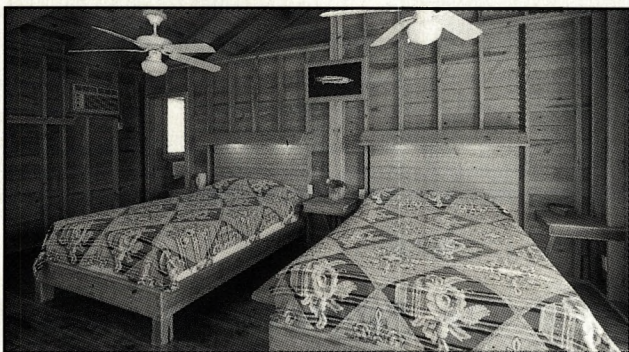
an eight acre sand and palm tree studded peninsula facing the Caribbean Sea. In front, only a football field's length away, is a continuous shallow fringing reef and adjacent drop-off that runs for miles in either direction.

The resort was constructed of handsome wood, primarily treated pine that lends both a natural look and a pleasant warmth to the wilderness of the peninsula. The wood crafting and fitting was done by islanders with a long tradition in boat building. The grounds are sand and crushed coral; trails and landscaping are neatly arranged, walkways are lighted at night. The main building is a lovely peaked structure with four wings that radiate from a central axis. Wood, cool jalousie windows and ceiling fans create

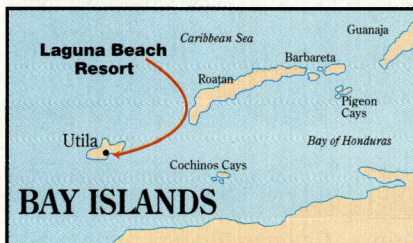
a tropical mood for the restaurant, lounge and social area. Upstairs is a video center, library and game room. Atop the peaked roof is a green beacon, which, at night, can be seen for miles away.

The guest cabins are of the same wood and design as the mainhouse. They are along a trail leading from the mainhouse past a gift shop/reception building lining the mangrove lagoon side of the peninsula. There are six bungalows, four duplexes and two singles (10 rooms total), all mounted on stilts. There are individual waterheaters and spacious interiors appointed in island furnishings and natural wood. A big feature is air-conditioning in the guest cabins, in addition to the large jalousie windows and over-head fans.

Assistant manager Bobby Bodden is a natural born host with a caring attitude and a good sense of humor. All three meals a day are excellent, featuring both continental and local cuisine. Chef Jovany Ortiz, from mainland Honduras,



Top and above: Spacious, individual wooden bungalows provide a comfortable, tropical atmosphere. Below (from left to right): Owner Troy Bodden, dive operations manager Marion Howell and assistant manager Bobby Bodden.



preparas hearty entrees and tasty, island-inspired desserts. A modern desalination plant provides clean, quality fresh water throughout the resort.

The dive operation is headquartered in a handsome ranch-style wooden building perched on the shore on the mangrove lagoon side of the peninsula. Full, modern rental gear is available, including 30 complete sets of new Sherwood gear and individual wet storage; huge rinse tanks and finger docks are all close and convenient. The main dive vessel is a beautiful and practical 36 foot Newton custom. It has all the accouterments for comfortable diving and the 14 1/2 foot beam provides a very stable platform at sea. Marine radio, oxygen and first aid kit are aboard and all U.S. Coast Guard standards are met.

Morning dives are usually two tank trips; a single tank dive is available in the afternoon or as a night dive (two night dives are normally offered each week).

There is unlimited shore diving available, accessing both patch reefs in the lagoon and the fringing reef outside.

PADI instructor and dive operations manager Marion Howell and boat skipper Wagner Whitefield were a constant joy, in and out of the water. They are both Utilans with a wonderful, long-term relationship with the ocean. Marion was a big help with finding special photo subjects.

Laguna Beach Resort accesses approximately 40 dive sites. The following are some of the highlights.

SOUTH COAST: Utila's extensive southern coast supports a nearly continuous close-hugging fringing reef. Shore diving is possible at many entry points. Guests usually enter the water from a Laguna Beach dive boat and swim or drift back to the resort's beach. The fringing reef profile is a narrow plateau leading to a shallow (15 to 25 feet) reef crest with spur and groove formations often tumbling vertically to a 110 foot deep sand and coral slope. Stony corals are very species diversified; notable are frequent stands of huge Pillar Corals (*Dendrogyra cylindria*). Several shallow sea gardens in this area present some of the most beautiful displays of reef tropicals in the

TACA has modern 767 and 737 aircraft and offers convenient schedules from U.S. gateways to San Pedro Sula and Roatan.



Bay Islands. The drop-off zone frequently features amazing quantities of bushy Black Corals. Here, too, are impressive numbers of Purple and Blue Bell Tunicates as well as occasional clusters of rare orange-lipped Bulb Tunicates.

NORTH COAST (ESPECIALLY TURTLE HARBOR): On the lip of the continental shelf is a plateau at 25 feet, capped with impressive stands of Pillar Coral, pinnacles of mountainous Star and Starlet Corals and cascading sheets of Lettuce Coral. The platform falls quickly away to a sheer, deep wall that extends to depths greater than 1,000 feet. This is a very active big fish zone where you can expect turtles (Turtle Harbor, as the name suggests, is a turtle nesting site), groupers, snapper, parrotfish, jacks, Mackerel and, occasionally, Spotted Eagle Rays.

SEAMOUNTS: In all quadrants and especially off Utila's eastern and southern

Cayman Diving Lodge

Grand Cayman's East End Retreat



A 70 foot dock juts into the shallow turquoise lagoon where the *Minnow III* and *Minnow Too* await divers.

TEXT AND PHOTOGRAPHY BY WALT STEARNS

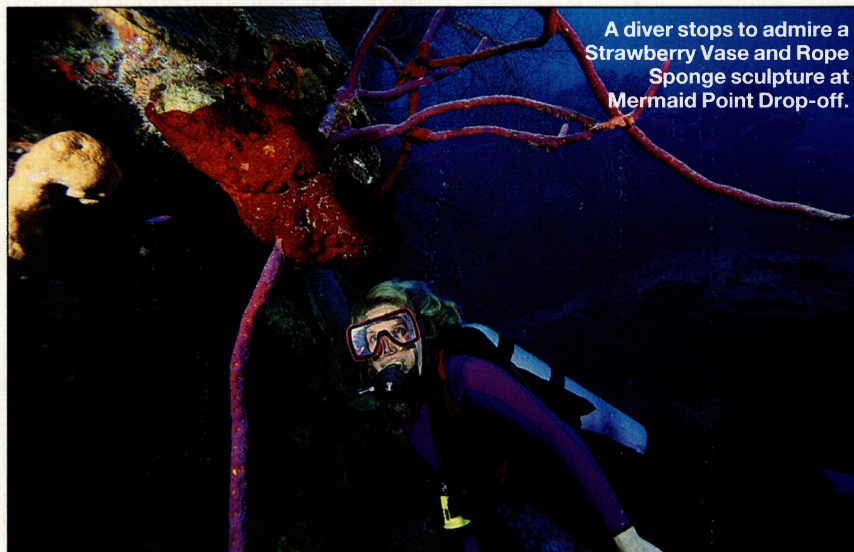
When convenience and personalized service are top priorities, Cayman Diving Lodge, on Grand Cayman's East End, is the place. Built close to the water's edge with its own 70 foot dock, the lodge has everything, including its own dive boats, making it second to none on this side of the island. In addition to an open air restaurant and bar, there are 14 air-conditioned rooms, a small equipment rental and repair center, and a small boutique.

Since its opening in 1972, the Cayman Diving Lodge has been an entirely self-sufficient dive resort. The equipment storage room is near the dock, complete with freshwater rinse station and plenty of hanging racks. In contrast to its posh counterparts on Seven Mile Beach, this is a real diver's hotel. There are no tennis courts, telephones or TVs in the rooms and no pool (unless you count the shallow, turquoise lagoon outlined by the barrier reef just offshore).

The Cayman Diving Lodge resembles a bed and breakfast inn. Even the meals are served homestyle—in the open dining area and bar by the water. While not particularly fancy, the well maintained guestrooms feature king and queen sized beds and clean, private baths. As a result of the most recent renovations, the accommodations are now better than ever. New bedroom furniture, ceiling fans and white tile flooring have been added throughout. All rooms have double wide French doors—the second story rooms open onto the large, wooden deck; the ground floor guestrooms face the ocean



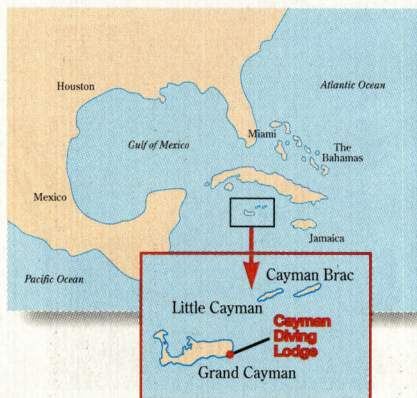
Above: Cayman Diving Lodge is a 14 room, East End diver's retreat, with a restaurant, bar and dive facilities. Right: Silversides scatter in the wake of a feeding Tarpon (*Megalops atlanticus*).



A diver stops to admire a Strawberry Vase and Rope Sponge sculpture at Mermaid Point Drop-off.

or patio porch.

After a hearty breakfast, boats depart the dock around 9:00 am for the two tank morning trips. From there, travel to the sites can range anywhere from 10 to 40 minutes. The lodge's two 45 foot, diesel powered Garcias, more than well suited for the rigors of East End diving, efficiently deliver divers to East End's



prime sites. The *Minnow III* and *Minnow Too* are identical, with the same built-in, centered tank racks, bench seats, wide stern swim platform, freshwater shower and four by six foot carpeted camera table. Both boats have a large camera rinse bucket and provide dry storage under the wheelhouse.

While each boat could easily handle 26 divers, neither will go out with more than 20. Instead of preplanning selected sites, the crew at Cayman Diving Lodge prefers to make on location judgement calls. Consequently, if visibility, currents or sea conditions look questionable, they go elsewhere.

Once the boat is secured to one of the East End's 58 moorings or anchored at one of its lesser known spots, the captain gives a short, on-site briefing before leading the dive. Customarily, the first wall dive is guided. Later, buddy teams using computers are given a little more freedom on subsequent wall dives. Shallow dives are guided upon request only.

DIVING EAST END

The mere mention of East End conjures up visions of untamed beauty. The mystique of this remarkable frontier is further fueled by bold submarine cliffs with expansive ravines, undercuts and swim-throughs featuring thick tapestries of vividly colored sponges and robust gorgonians. In addition to their sheer scope, the walls at East End are the places to catch a glimpse of Eagle Rays, large schools of Horse-eye Jacks, big groupers and sea turtles, even sharks cruising in the distance on occasion.

While most of these walls don't typically begin the journey to oblivion until depths of 60 to 70 feet, rest assured their dramatic vistas are outstanding. Some of

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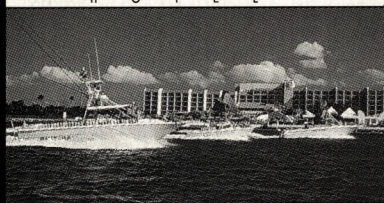
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CAYMAN DIVING LODGE

the area's popular sites include **McCurly's Drop-off**, **Jack McKennedys' Canyon**, **Pat's Wall** and **The Arch**.

Following suit are the East End's shallow reef sites. **Ironshore Caves**, **Catacombs**, **Grouper Grotto**, **Cinderella's Castle** and **Chub Hole** feature extensive deep ravines with walls 20 to 30 feet high. Lying in the 40 to 60 foot zone, many of these formations are interconnected by numerous tunnels and caves winding through the ancient limestone. At a site called **Snapper Hole** is a huge anchor dating back to 1892.

Even the fishlife here can present a few surprises. Besides the large resident population of Tarpon—measuring three to four feet in length—expect to encounter anything from large Cubera Snappers and groupers to the odd Jewfish. From July through October, several of these cave systems become clouded with schools of Silversides. When this happens, divers can observe the Tarpon gorging themselves, taking in large mouthfuls of the tiny fish as they punch through their ranks.

The basic package for Cayman Diving Lodge includes accommodations, meals, daily two tank boat dives and tanks for shore dives. The lodge's normal itinerary is a two tank morning trip with a third, single tank afternoon trip and/or a night dive as an option, provided a minimum four divers take part.

Owing to the Caman Diving Lodge's down to basics simplicity and the remoteness of the East End, it is safe to say this is not the place for those who might miss flashy nightlife. And, even the lodge's reservations number in Lubbock, Texas, (800) TLC-DIVE, seems to reflect its characteristic flavor.

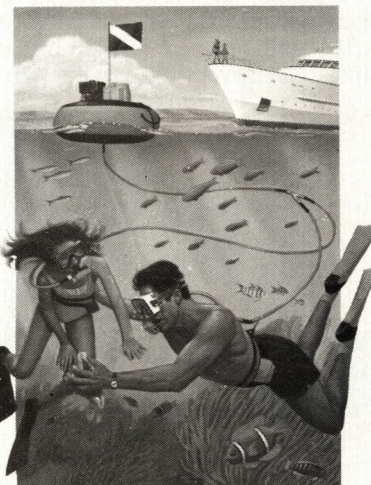
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Kingfish, Inc. and Fisher Research Laboratory, the makers of U/W metal detectors, have formed the diving industry's first underwater metal detecting specialty classes. They will teach divers to research local U/W sites and use metal detectors successfully. The first class premiered in September in Southern California.

For more information, contact Joe Stich, 6966 S. Atlantic Avenue, New Smyrna Beach, Florida 32169; (904) 426-5757, fax (904) 426-5744 or e-mail outdoor@america.com.

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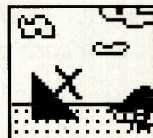
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These people include some of diving's legendary figures: Rodney Fox of the Great White Sharks; Bob Halstead in Papua New Guinea; Rolf Schmidt in the Red Sea; Kevin Baldwin in Northern New Guinea; Jan Ellingsen in Eritrea; Heinz Buchbinder in Malpelo; Craig De Wit in New Guinea's Coral Sea; Francis Toribiong in Palau; Bob Evetts in Australia's Coral Sea; Craig Howson in Western Australia; Lance Higgs in Truk Lagoon; and Rob Barrel in Fiji.

When the history of dive travel is written, the role of these indomitable captains will finally be recognized. I salute them, for I know what they have overcome to serve their clients.

Prominent among this gallery of high achievement is a band of tough-minded, competent and unbeatable Israelis whose operations share the name *Hunter*. The origin of this new fleet of live-aboards is a colorful, serendipity-drenched story from the past.

In 1986, I sent some divers to the Red Sea for a live-aboard cruise. The group, a medical seminar, was too big to fit on the vessel we were then using, so the skipper arranged for a second boat to handle the overflow. When the group returned, they wildly praised the second boat with its Israeli captain.

"By the way," they said, "with all of the political instability in the Middle East, this terrific captain wonders if you could use him in some other part of the world."

The rest is history. That much praised skipper was Avi Klapfer. With the help of my friend Francis Toribiong in Palau, Avi brought a wonderful six passenger ves-

The Hunter Fleet

Exploring New Frontiers in Palau and Cocos Islands

TEXT AND PHOTOGRAPHY BY CARL ROESSLER



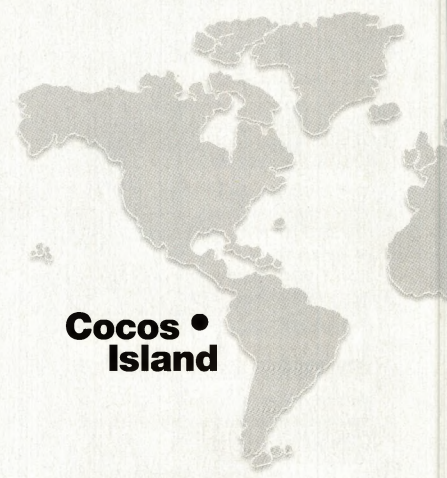
The 60 foot *Ocean Hunter* plies Palau's abundant waters with six avid divers.



Rainbow Hunter, a Grumman HU-16 Albatross, is the world's first flying live-aboard.



The 120 foot *Sea Hunter*'s arena is Cocos Island, home of the Hammerheads (below).



Cocos • Island

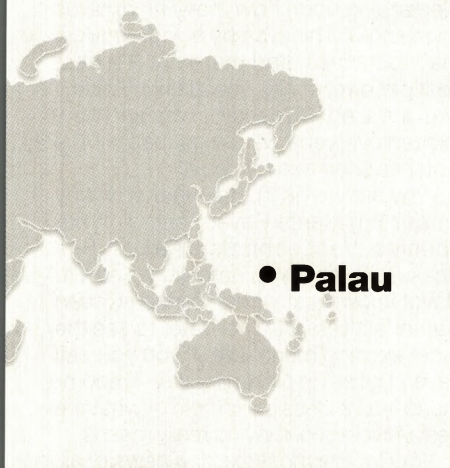


Palau's diving adventures include intense Gray Reef Shark action (above) and manta cleaning stations (below left).

sel, the *Sun Tamarin*, all the way from Florida across the wide Pacific and began operation in Palau in 1987.

For the two years Avi ran her, *Sun Tamarin* was the queen of the Pacific. Avi moved on, sold the boat and began a family. While I was happy for him personally, it was a big disappointment to lose such a terrific product.

However, the gods do work in mysterious ways. A year later, Avi turned up with the idea of a larger boat, able to carry 12



to 14 passengers. "Where do you need a boat?" he asked.

Down on my knees with my eyes raised to heaven I murmured, "Oh, please, have him put the boat at Cocos Island." He did. I don't know how he pulled it off but that's why I admire the guy so much. I do know that when I rolled down the hill with that first busload of divers, Avi and his crew were frantically nailing down the new carpet in the salon—but *Undersea Hunter* was ready!

In the intervening years, *Undersea Hunter* has become one of the most respected live-aboards in our industry, so much so that in 1995 Avi and his partner Yosy Na'aman brought a brand new ship, *Sea Hunter*, to Cocos. As part of this growth they then developed an entirely new adventure, the Humpback Whales of Silver Banks (Dominican Republic), offered every January through March.

Undersea Hunter and *Sea Hunter* are big, fast, modern, high-tech vessels with an astonishing record of introducing divers to hundreds of Hammerhead Sharks, Giant Mantas, Whale Sharks, Humpback and Sperm Whales!

This is a great success story so far, but here is where it gets really interesting.

When Avi and his wife Orly brought the *Sun Tamarin* to Palau in the '80s, another Israeli couple joined them and spent the first six months assisting the first cruises in Palau. These adventurous people were Navot and Tova Bornovski.

In 1993, imagine my delight when Avi

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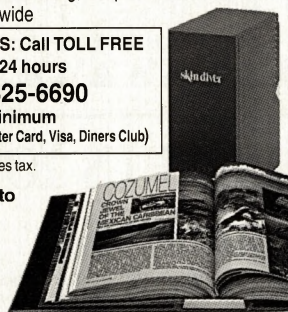
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THE HUNTER FLEET

called and asked whether I would like to have a new six passenger live-aboard run by Navot and Tova in Palau.

Like it? I'd kill for it!

The new Palau live-aboard was *Ocean Hunter*. Diving is done right off this boat, no chase boats are utilized. When I was aboard for a week recently, our divers each enjoyed 30 to 34 dives (depending upon how many night dives each took). This was by a wide margin the most dives (and therefore the best cost per dive) of any operation in Palau. I was amazed how easy it was and how excited everyone was to get back in the water as soon as they could.

Why did we go in the water so many times? Big Manta Rays. Sharks of four species. Vast schools of jacks. Sea Snakes. Turtles. You name it, we saw it. Navot knows just where to insert *Ocean Hunter's* divers into the water to see the most exciting marine life. If you yourself haven't gone on *Ocean Hunter*, I recommend it as a classic example of what the best in live-aboard diving really means.

Now for the most exciting news of all. (Maestro, a drumroll, if you please.) Navot is putting a new live-aboard into Palau, but this one is different. I mean, really different. It flies.

That's right, I said *it flies!* *Rainbow Hunter* is a Grumman HU-16 *Albatross* seaplane, equipped to fly up to six divers and a crew of three to the Pacific's most isolated reefs and atolls. It can reach remote dive sites in or near the Philippines, Indonesia or Papua New Guinea in less than two hours. During its first year, Navot plans to fly *Rainbow Hunter* to reefs in Micronesia near the Indonesian border and to Ngulu and Ulithi atolls, which lie far south of Yap.

Navot visited these atolls when he was bringing *Ocean Hunter* to Palau. "We had 80 turtles in one dive! We had schooling Silvertip Sharks! Just imagine what we will see as we fly over the reefs. From 500 feet we'll know which big animals are where around the entire perimeter of the atoll!"

Navot's not excited. Oh, no.

If you think about it, *Rainbow Hunter* is the first live-aboard in the world that will offer aerial photography as a built-in part of the adventure! A long time avid diver, I find the idea of spotting whales or rays or sharks from the air pretty sexy. I have flown in spotter planes in Western Australia and could clearly see the Whale Sharks swimming just beneath the surface. It's amazing what you can see from 500 feet.

The key to *Rainbow Hunter* is built into the answer to this question: What is a

seaplane when it lands on the water? Answer: It's a boat! In this case, a boat with nice (lightweight) beds, air-conditioning, a watermaker, compressors, tanks—in other words, a fully equipped live-aboard with two, four man chase boats to take us to the dive sites.

Thus you see the birth of diving's hottest new fleet. The *Hunters* are blessed with superb management, who have a drive to innovate, a genuine care for clients and a passion to succeed.

These are great days to be a diver, especially if you are one of those who seeks new frontiers, new adventures, who boldly goes where no one has gone before. Yeah, right. Except that the *Hunter* guys and I will have to go there first—to check it out, of course—to be sure it's really right when you get there. That's why I love this job.

For further information on the *Hunter Fleet*, contact See & Sea Travel, Inc., 50 Francisco St. #205, San Francisco, CA 94133; (415) 434-3400; fax: (415) 434-3409. You can e-mail divxpri@ix.net-com.com or visit the Web Site at <http://www.divxpri.com>.

RIDING ROCK INN

(Continued from Page 87)

southwest region of Sandy Point and French Bay.

San Sal's underwater clarity is typically in the 150 to 200 foot range and the sites along French Bay are similar to Little Cayman's Bloody Bay. Around this side of Sandy Point, sites such as **Black Forest**, **Double Caves** and **Doctor John** begin their dramatic drops at 45 feet, descending almost straight down to a narrow shelf at 150 to 170 feet before plunging to the abyss. Host to a multitude of gorgonians, Giant Barrel and Orange Elephant Ear Sponges, several portions of the upper precipice taper slightly inward just below the crest. Of course, plentiful fish life in The Bahamas is almost always a certainty.

HAMMERHEADS

Besides its excellent wall and reef diving, San Sal is home to Hammerhead Sharks. During a week's stay, guests should see a few, typically singles, pairs and threesomes. Most notable are the Atlantic Scalloped Hammerheads (*Sphyrna lewini*), which grow to lengths of eight to nine feet. They are generally wary and shy, posing no threat to divers. Near **Sandy Point**, particularly from winter through the early part of April, there have been documented encounters with anywhere from 8 to 30 plus sharks cruising between 70 to 150 feet. San Sal is the only place in the Atlantic where this phe-


nomenon has been recorded, a discovery that has only recently (the last four to five years) been confirmed.

WEST WALL

Even if the sharks are a no show, the great thing about San Salvador are its wondrously entertaining reefs and walls, which include those off the western, leeward side. Normally visited for the second wall of the morning and afternoon wall/reef trips (boats leave the dock around 2:45), several of the West Wall's noted fun sites are a mere 10 minutes from Riding Rock's dock.

Almost straight out from Riding Rock, **Sand Castles** features a steep drop-off that begins at the edge of a large, flat sandy plain in 30 feet of water. Over the edge, the southern stretch of the wall drops down to a narrow lip at 150 feet. Along this steep grade are several scattered, 10 to 12 foot high, nob shaped coral formations that rise from the sand. To the north, the same wall has a more vertical profile to a depth of 140 feet before meeting a narrow protruding lip at 150.

Nearby **Telephone Pole** features a steeper drop-off, starting from the same

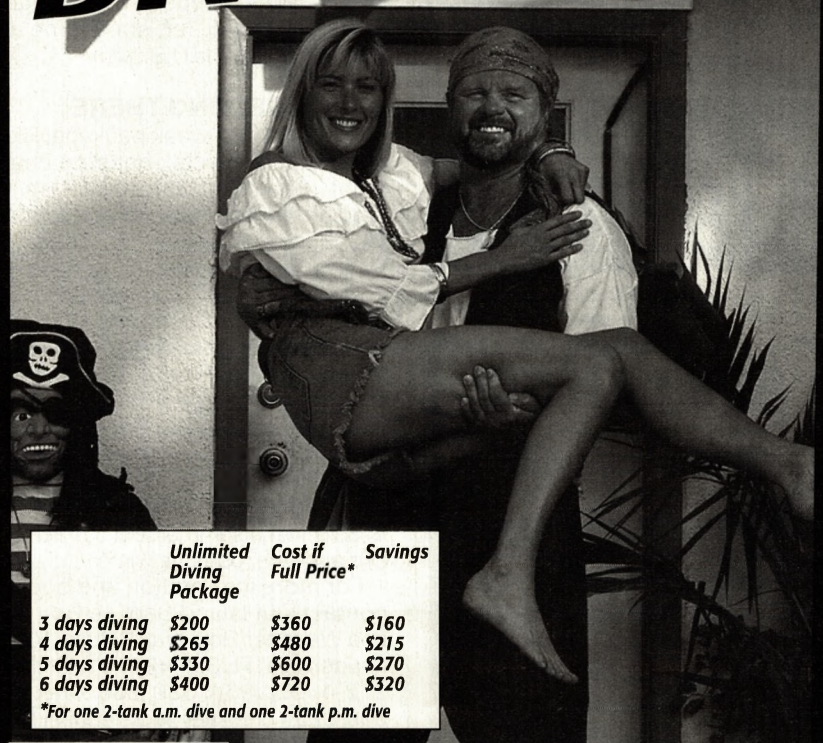


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RIDING ROCK INN

broad white sandy plain fronting Sand Castles but at a depth of 45 feet. The site is named for the large telephone pole buried halfway in the sand, marking the entrance to a deep ravine. With walls scarcely nine feet apart, the ravine passes through the crest of the reef to 90 feet. In addition, Telephone Pole is also the place to encounter several very tame Nassau Groupers.

For even more grouper action, there's Telephone Pole's southern neighbor, **Grouper Gully**. Similar in topography, with a sharp drop-off disappearing into the abyss from a depth of 40 feet, Gully features several large plateaus at varying points between 70 and 120 feet. After that, it's straight down to la-la land. Other popular sites include **Rookery**, **Shark Alley** and **Shangri La**.

One of the sites often reserved for both the first day, second dive and night dives (Tuesday and Thursday) is **The Hump**, a 15 to 20 foot high mound of coral rising from 40 feet. Some 40 by 60 feet across, it is a small critter hunter's dream. Surrounding the site are several large mooring anchors, each weighing more than a ton, left some time after World War II by the U.S. Navy.

GETTING THERE

For its full one week package, Riding Rock runs a special, nonstop charter flight, departing Saturday from Fort Lauderdale International and returning the following Saturday. For shorter trips, Riding Rock's stateside service, Out Island Service Co., can help coordinate flights to fit your needs with both Bahamasair and GulfStream Airlines.

San Sal is paradise. The residents are super friendly and the climate, tropical, with temperatures in the mid 80s (°F) during the spring/summer, sometimes dropping to the low 70s during the winter. Water temperatures typically run 79 to 85°F in the summer and can fall to the mid and low 70s in the winter.

For more information and booking, contact Out Island Service Co., 1170 Lee Wagener Boulevard, Suite 103, Ft. Lauderdale, FL 33315-3561. Call (800) 272-1492, (954) 359-8353, fax (954) 359-8254 or e-mail your request to ridingrock@aol.com

BLACKBEARD'S CRUISES

(Continued from Page 103)

Everything you want to drink is also included. The refrigerator is kept stocked

with orange, cranberry and apple juice. A bar-style dispenser pumps out Coke, Diet Coke, Sprite and soda water. A cold keg of beer is always on tap and the well stocked liquor cabinet has a selection of premium brands.

There is only so much room in a 65 foot boat, so the 23 passengers don't have individual cabins. They each do have a private berth, however, and that seems to be all anyone needs. In fact, the intimacy of the accommodations somehow adds to the experience rather than detracting from it. The on-board parties are more fun and the adventures are more intensely savored.

Don't expect there to be fresh water to waste. Even though the boats are equipped with watermakers, usage has to be carefully controlled. The shower is outfitted with dual outlets, so most of the washing can be done with salt water and the fresh water can be reserved for rinsing. A supplementary freshwater

BLACKBEARD'S FLEET

*Pirate's Lady, Morning Star
and Sea Explorer*

Length.....	65 feet
Beam.....	19 feet
Draft.....	6 feet
Engine.....	135 hp diesel
Generator.....	20 kw
Sail type.....	sloop
Cruise speed.....	9 knots
Air compressor.....	17 cfm Bauer
Number of scuba tanks.....	46
Watermaker.....	15 gph
Crew.....	6
Maximum number of passengers.....	23

rinse is set up on the aft deck, using water collected from air-conditioner condensation. A large barrel of fresh water is also carried for rinsing cameras and computers. Of course, drinking water is unlimited. Two coolers are continuously filled on deck with water and another drink such as lemonade or Kool-Aid.

The Bahamas are synonymous with blue water and brilliant sunshine, so chances are you'll get plenty of both. The boats rig a huge sunshade over the main boom whenever possible but you will probably find yourself out in the sun at various times of the day. Your friends will still envy your tan when you get back home, even if you wear a hat and use a good sunscreen.

WHAT TO BRING

The best advice is to pack light; you won't need much and storage space is limited. Start with soft luggage, such as a small nylon duffel bag. Throw two or three bathing suits in first, then some tank tops and T-shirts. Add a couple pairs of shorts, a small toilet kit, a hat,

sunscreen, flip flops and sunglasses and you are almost finished. Bring your own towels—two smaller ones are better than one big one. They should be the kind that dry quickly and are easy to identify. A lightweight rain jacket also comes in handy for those brief showers. In the winter, rain pants and a sweatshirt can also come in handy. Sheets and pillows are provided. Repeat pirates, of which there seem to be many, often bring their own stadium cushions.

THE DIVING

Alastar covered Blackbeard's dive procedures with us on the first morning. Refined over the years for maximum safety and convenience, the procedures are the same on all three boats. After the dive briefing, you take an aluminum 80 or 60 from one of the storage tanks, mount your BC and regulator and lie the tank on the deck. When you and your buddy are ready, a crewmember lifts the tank onto your back and you're ready to giant stride off the side. You are expected to conduct the dive safely according to the guidelines of your certifying agency. Drift dives are guided and guides are available on request but otherwise you are responsible for your own behavior underwater. Getting back aboard is easy via the wide stairway and ladder that cuts through the transom. As soon as you come aboard, a crewmember removes your tank, leaving you free to put the rest of your gear away.

Instruction and checkout dives are available on all the Blackbeard's boats, along with a full selection of rental equipment. Also, some of the best snorkeling in the world can be found in The Bahamas. Snorkeling is a snap from Blackbeard's boats and is encouraged anytime the boat is anchored or moored.

We made many exciting dives but we barely sampled the nearly 200 sites Ron has marked in his navigation log. **Tuna Alley**, named for the sportfishing boats that come out of Cat Cay, is often done as a drift dive. The reef varies from steep slopes to vertical walls and there are usually lots of big pelagics. Visibility was about 80 feet for our dive at **Grouper on the Head**. This is a relaxing dive with plenty to see. The depth is 40 to 60 feet, with large coral mounds interspersed on a white sand bottom. Swimming among the mounds is similar to touring the different neighborhoods of a city. Yellow Goatfish hang in schools near the Star Coral and Rock Beauties stay near the sponges. **Victory Reef** is a long, healthy coral slope south of Bimini. The shallow section is only about 30 feet deep and the

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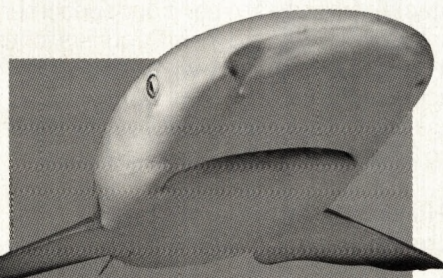


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BLACKBEARD'S CRUISES

reef runs for a considerable distance before dropping off steeply. The **Gingerbread Grounds**, a large area of relatively shallow coral reefs between Bimini and Grand Bahama, is one of those places you can explore for days. Packed with pristine hard and soft corals, the reefs provide habitat for a huge variety of fish.

TRAVEL INFORMATION

U.S. citizens can travel to The Bahamas with a passport or a certified birth certificate and a photo ID. The captain collects everyone's documents before the boat leaves Miami and takes care of all the customs and immigration formalities. Blackbeard's boats depart the Watson Island Marina at 3:00 pm Saturday, running across to The Bahamas during the night. The return trip to Miami starts Thursday night, with the customs visit scheduled for Friday morning.

For more information, call Blackbeard's Cruises at (800) 327-9600 or (305) 888-1226 from Florida and Canada, or write to Blackbeard's at P.O. Box 66-1091, Miami Springs, FL 33266. If you prefer the speed of e-mail, Blackbeard's Cruises can be reached at sales@blackbeard-cruises.com or try the Web Site at www.blackbeard-cruises.com. 🐟

DIVE MEDICINE

(Continued from Page 106)

skin to be activated by contact later. Consequently, contact with a nematocyst-bearing animal produces an initial sting that is often followed by continuous stings. The initial contact is usually the worst because it triggers many nematocysts to inject their toxin. In the case of a Sea Wasp, the initial dose can be lethal.

SEA WASP INJURY

The Sea Wasp is described as a box jellyfish (cubomedusa) because it is square, with one or two tentacles at each corner. Sea Wasp venom affects the nerves, heart and blood cells and causes damage to the skin in the contact area. Sea Wasp stings can cause respiratory paralysis but a victim can be saved by mouth to mouth respiration. The venom breaks down rapidly in the body, usually lasting no more than 30 minutes. If respiration can be supported that long, the victim will survive. Following contact, a severe blistering rash will occur that produces permanent scarring.

When a swimmer is injured by a Sea Wasp, there is usually time for him/her to

get to the beach and get help. A diver in deeper water is in more danger because breathing paralysis will result in drowning if assistance is not provided. In Australia, an antivenin for the Sea Wasp sting is available in hospitals. Another Australian box jellyfish, the Morbakka, also produces severe stings but is not as dangerous as the Sea Wasp.

IRUKANDJI STINGS

Other toxic jellyfish found in the waters around Australia cause what is known as the Irukandji Sting Syndrome. Fifteen to 30 minutes after contact with the jellyfish there is intense, cramp-like pain in the area of the sting and blood pressure rises. Accompanying symptoms include headache, cold extremities and reduced urine output, suggestive of a massive adrenaline release caused by the toxin. Early recognition of this type of sting is difficult because the pain and skin reaction are minor.

PORTUGUESE MAN OF WAR

Portuguese Man of War jellyfish are common in most warm seas of the world. They drift on the surface, driven by the wind blowing against the bright blue inflated sail that also serves as a float. Beneath the blue sail is a cluster of tentacles that can be 20 to 30 feet long. These trail beneath and below the sail to sting small fish that wander into them. Swimmers and divers can also swim into the long streamers trailing below the sail. Contact with a tentacle causes severe pain and skin injury. There have been several deaths from the Portuguese Man of War. The toxin can cause respiratory paralysis but often death is owing to effects of the toxin on another illness, such as heart disease, that is aggravated by the toxin. Contact with a small portion of tentacle (probably millions of nematocysts) will cause a severe skin reaction but the toxin dose is usually not enough to threaten life in a healthy diver or swimmer. Massive contact, however, can cause serious illness or death. Children who receive a large toxin dose are particularly at risk.

OTHER MARINE JELLYFISH

Contact with most other species of jellyfish will not cause a serious problem. The sting of most jellyfish is annoying and can produce mild or moderate skin responses that usually heal without permanent scarring. This same effect is true for other nematocyst bearing animals such as fire coral, stinging hydroids, hard and soft corals and anemones.

TREATMENT AND PREVENTION

Stings can be prevented by wearing protective clothing. Lycra/nylon dive suits provide excellent protection. Gloves should be worn to protect the

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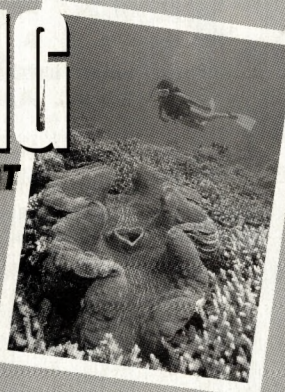
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DIVE MEDICINE

hands from corals and other stinging animals. The thickness of the covering needs to be about the same as nylon stockings.

Many of the stinging jellyfish swim near the surface at night. On night dives, don't linger near the surface. Search the water with your light for these small, transparent jellyfish. The box jellyfish of the Caribbean does produce a severe sting but it is not life threatening. Caution is still worthwhile.

Treatment of the local sting involves destroying the untriggered nematocysts. Over the years, ammonia solution, meat tenderizer, rubbing of sand, fresh water and urine have been recommended. Sand and fresh water both trigger the nematocysts so, if you want an extra thrill from your jellyfish contact, sand and fresh water will produce extra stings. Present advice is to use plain white vinegar to destroy the nematocysts on the skin. Severe reactions have been treated with cortisone with some success.

Remember: Tentacles contain active nematocysts even when detached from the jellyfish. Contact with nematocysts attached to a diving suit can cause stings several hours after leaving the water.

Although most sea stings are bothersome but not dangerous, divers should avoid contact with stinging animals to minimize injury to the skin and eliminate the possibility of serious injury.

Dive Notes

THE SCUBADREW CRUISES: Drew's Dam Divers' new 28 foot Canaveral dive boat, the *Scubadrew*, is the first and only U.S. Coast Guard inspected dive boat operating in Nevada and Arizona. The *Scubadrew* is certified to carry 15 divers.

For the past two years, Drew's Dam Divers has been operating a six pack dive charter service within the Lake Mead National Recreational Area on the 24 foot *Spectrum*. With both vessels in operation, same day dive trips can be scheduled for different groups above and below Hoover Dam.

Group rates are available. Instructors are highly encouraged to bring advanced and specialty students. For reservations, call (800) 291-2650.

LAGUNA BEACH RESORT

(Continued from Page 119)

coasts, are many seamounts or reef pinnacles. Once thought to be few and scattered, it is now known that there are more seamounts than can be counted throughout the Bay Islands. Reaching to within 35 to 45 feet of the surface and extending to depths of nearly 200 feet, these pinnacles act as oases for fish and invertebrate life. Lush soft corals and Deep Water Seafans are found here as well as a great diversity of corals and pelagic fish. Here is a realm of nearly constant surprise, with schools of tropical fish mingling with jacks, snapper, Spadefish, turtles and more.

WHALE SHARKS: Utila may well be the Whale Shark capital of the Caribbean. Year-round sightings are now reported, mostly in the corridor and within a known triangle of open water that includes this island. Whale Shark encounters over the past two years have averaged one every two weeks, with the animals 20 to 60 feet in length. Off Utila, divers have often been thrilled with 5 to 45 minute swims with this, the largest fish in the sea.

Individual sites regularly visited by Laguna Beach divers include **Laguna Beach Shore Dive**, a wall that plummets from 15 to 100 feet just 150 yards from the resort; **Black Coral Wall**, with an abundance of young Black Coral trees and deep water gorgonians beginning in only 20 feet of water; **Silver Gardens**, a beautiful coral garden in 15 feet of water adjacent to a scenic wall; **Pinnacles**, a dramatic coral peak that rises alongside the wall from 140 to 20 feet; and **Blackish Point**, a 30 foot plateau etched with a continuous cavern at 65 feet.

In addition to diving, Utila Watersports in town operates the only full service professional travel agency on the island. Fax and phone communications are available at this office and arrangements can be made for a variety of mainland experiences. These range from an exciting all day whitewater river rafting excursion on the Rio Cangrejal to a visit to the ancient Maya city of Copan.

The new Laguna Beach Resort combines the advantage of charming island-style accommodations with an excellent dive operation and a diversified dive experience.

For more information, contact Laguna Beach Resort at (800) 668-8452, fax (318) 893-5024 or, on the island, phone/fax 011 (504) 45-3239.

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It's interesting to stop by Captain Slate's Atlantis Dive Center booth at a dive show. Usually there is a large crowd of divers assembled. They are waiting to get a signed poster from the man foolish enough to purposely put the beak of a dead Ballyhoo between his clenched teeth so a large and very toothy Barracuda can swim by and snag it. This has become Capt. Slate's trademark and people want to meet the man who developed such a strange specialty. Plus, I think there is a little morbid curiosity. Divers want to say they knew Slate when he still had lips and a nose!

Slate and I have a history with Barracuda feeding over the years. He and I came to Key Largo about the same time in 1978, he to open Captain Slate's Atlantis Dive Center and me to open my business in underwater photography. We became friends early on. When he started to feed fish and thought there might be a photo opportunity, it was natural for him to call me.

I still remember that first photo shoot. Slate told me he was going to put a fish in his mouth and a large Barracuda would take the bait. My job was to get it on film. Those teeth looked pretty impressive so I stayed a respectful three feet away. When I viewed the film, I wasn't happy. There were too many Yellowtails in the frame trying to get free food and, since they were often too near the strobe, they were overexposed. I needed to get even closer to Slate.

The second time I was probably less than two feet from the action. This worked much better and the image Slate has used in all his ads since came from that shoot. It was picked up by *Ripley's Believe It or Not* for the syndicated Sunday comic section and ran in a half dozen European dive magazines. Slate even made the *National Enquirer* with that shot.

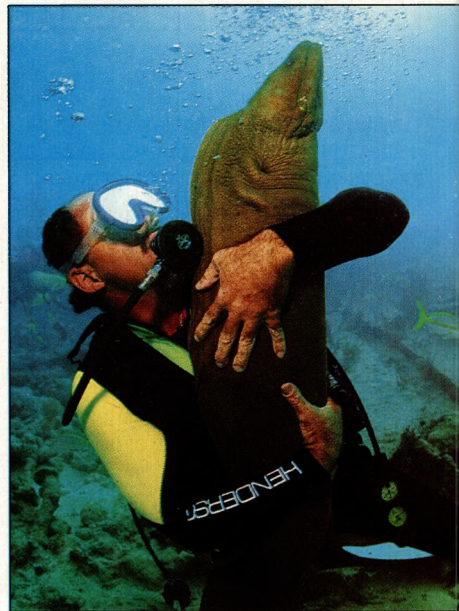
I have photographed Slate and his underwater menagerie dozens of times since then. That first Barracuda, named Oscar, is now gone but Slate's two new piscine friends, Flash and Psycho, remain ever-willing photo fodder.

Most of the feeding happens around a scenic historic shipwreck known as the **City of Washington**, sunk in 25 feet of water in 1917. The wreck was blown apart to avoid a navigational hazard but its nooks and crannies provide ample habitat for marine life. Two large Green Morays usually show up for the fish feeds and, lately, a Nurse Shark has been competing for the handouts. Yet, the stars of the show remain the Barracuda. I've found that the best photos happen by following a few simple rules.

1 GET CLOSE: The feeding happens in a sand/rubble area near the wreck, so both Slate and photographers

can kneel on the bottom without damaging coral. Spectators without cameras tend to settle in the outer perimeter while photographers and videographers work fairly close. Slate needs room to maneuver. While he won't allow his guests to get close enough to get hurt, he will allow them near enough for good photos. Being close to the action assures good color and should keep most of the Yellowtails out of the frame. Plus, the fish feeding activity and the movements of the divers tend to stir up the bottom. Working close minimizes backscatter.

2 USE A WIDE ANGLE LENS: The best shots show the interaction of Slate and the Barracuda and require at least a 20mm lens on a Nikonos. I usually use two cameras, a Nikonos with 15mm lens and a Nikonos RS with a 13mm fish-eye. Because the Barracuda is usually nearer to the lens than Slate, they appear even larger and more impressive.



Captain Slate's Atlantis Dive Center

How to Photograph a Fish Feeding Fanatic in the Fabulous Florida Keys

TEXT AND PHOTOGRAPHY BY STEPHEN FRINK



Captain Slate mouthfeeds Psycho the Barracuda in one of the most renowned and photographed events in the diving world. Top: Captain Slate embraces a Green Moray Eel that moves in when Psycho has had his fill.

3 USE A STROBE THAT RECYCLES QUICKLY: The action happens very quickly. The speed of a Barracuda as it strikes is almost too fast for the eye to register. The strobe has to be fully recycled for each pass. If possible, use rechargeable batteries instead of disposables.

4 SHOOT ONE KEY SHOT PER PASS: It's unlikely you will get more than a single shot as the Barracuda strikes, so predict the moment and make it count.

5 LEAD THE SUBJECT: No matter how fast your reactions, you won't be as fast as the Barracuda. Try to position yourself so the Barracuda is swimming toward you and press the shutter when you see it about a foot from the bait. The hot shot is the Barracuda with its mouth open, fully displaying teeth, just before it clamps down on the Ballyhoo.

6 DON'T FORGET THE FISH ID SHOTS: Food in the water makes the animals much bolder than usual. Use this opportunity to get tight fish portraits that might not be possible otherwise.

7 REMEMBER, THE SHOW IS SOON OVER: These fish are here for the food but they can only eat a limited amount of baitfish. As they get full, the action slows down. The Barracuda are the apex predators here and, as long as they want to feed, they own the turf. Once they are full, other opportunistic feeders, such the moray eels, become more aggressive. If all the critters are present, the fish feed can last a half hour or more. Try to capture every feeding pass for it will soon be over.



Captain Slate's Atlantis Dive Center is at Mile Marker 106 in Key Largo. An A-frame building on the highway is a landmark and serves as a welcome center, while the main shop is nearby, right on a canal, offering easy access to the Atlantic Ocean and the Key Largo National Marine Sanctuary.

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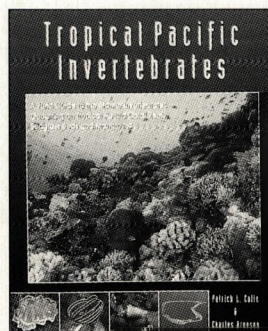
To learn more about YMCA dive in-
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You can pick up the autographed
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TROPICAL PACIFIC INVERTEBRATES

BY TY SAWYER

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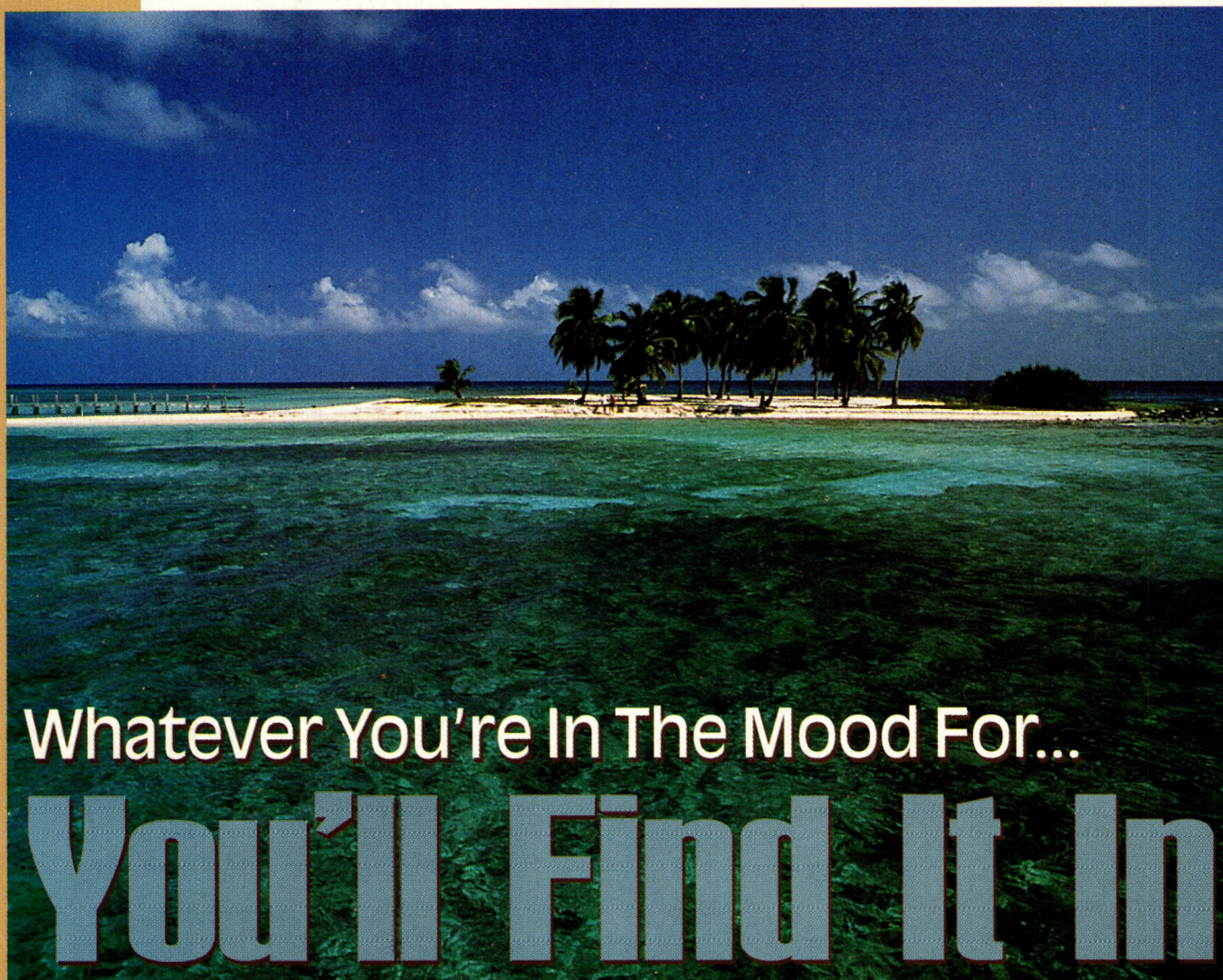
BELIZE

1997 DIVE & TRAVEL GUIDE



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For divers and other active travelers Adventureland is not a theme of a Disney park but a real place called Belize. Here is a country of unlimited discovery, ultimate contrasts and continuous, delightful surprises. Belize's considerable wilderness aspect makes it seem very far-flung but it is close, actually connected, to the North American continent. It is easily reached via modern jet from several U.S. gateways. This is a small country, only about the size of the State of Massachusetts, but its relatively smaller population (just under one-quarter million people) underscores the emphasis on nature. Belize is further expanded psychologically by its position and image as both a Central American nation and a country of the Caribbean. As a result of this dual nature, there would seem to be two countries in one—a nation of exemplary inland ecological appeal and an offshore Caribbean paradise encompassing one of the very best underwater environments in the world.

Belize has a total of 170 miles of coastline facing the Caribbean and every mile counts for scuba divers. Offshore, from 12 to 30 miles away, is a massive and continuous section of barrier reef—the Belize Barrier Reef, a part of the Great Maya Reef that stretches from Mexico to Honduras. The most compact and massive of these coral ramparts borders the entire country. Identified by Charles Darwin in the 19th century and Jacques Cousteau in the 20th century as the longest and most spectacular reef in the entire Caribbean (after Australia's Great Barrier Reef, it's the second longest in the world), it represents a lifetime of dive discovery. But that's not all—beyond the barrier reef are three huge and magnificent coral atolls. Each is another dive universe, each is larger than some well known diving islands and each is unique and different. Along the barrier reefline and around the offshore atolls are hundreds of islands. Dozens are

equipped with comfortable accommodations, excellent restaurants and custom dive vessels dedicated to accessing Belize's underwater world. In total, there are more than 350 miles of coral reef—more than Cozumel, Bonaire and the Cayman Islands all together.

If you can tear yourself way from diving adventure, there is another Belize waiting for you inshore. Beginning with the wonderful people (of course, you will find them offshore as well), you will discover considerable innocence, intelligence, humor and charm. There are some pure and mostly mixed blood lines. The royal blood of ancient Maya kings is still linked to three Maya speaking groups living within Belize today; the Yucatecan, Mopan and Kekchi tribes are still important to the population mix, primarily in northern, western and southern rural Belize.

A thousand years ago ancestors of the present day Maya created impressive, sophisticated cities and structures in the jungle. We now recognize that Belize includes a sizable portion of the ancient Maya heartland. Fifteen of these sites, including Caracol with its Caa Na Temple towering 145 feet above the jungled Vaca Plateau (still the tallest man-made structure in Belize today), are available to visitors. Hundreds more are still obscured by the jungle.

Today, the population of Belize is a blend of Creole, Maya and Mestizo—a mix of primarily Spanish, African and Native American blood.

Other sizable and interesting ethnic groups include the Garifuna (Black



Belize



Left: Tiny cayes dot offshore Belize. Above, clockwise: A typical U/W sponge formation; a reproduction of a Maya frieze; one of the 150 varieties of orchids; an artisan displays his handiwork.



Caribs) and the Mennonites of European descent. Added to the mix is a succession of seafarers and Caribbean characters with a splendid sense of humor and an uncommon bond, with one another. Although several languages

are heard in Belize, communication is not difficult. Almost everyone speaks English here, the only Central American nation where English is the official language.

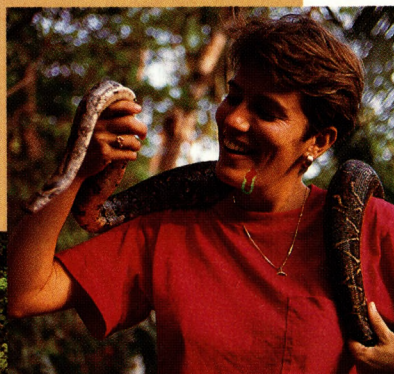
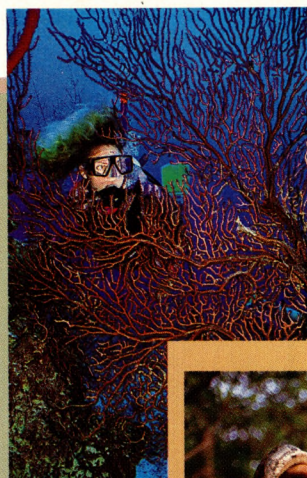
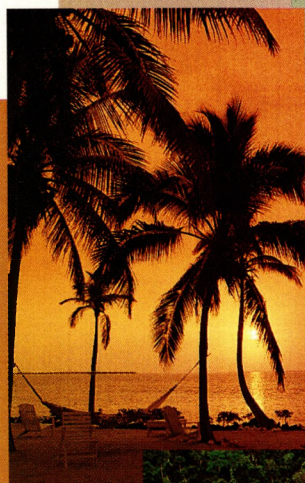
Visitors are attracted to Belize primarily because of its natural assets. Here is a place like nowhere else on earth, a biological (as well as cultural) shelter and corridor—a meeting place between two great continents and an ocean wilderness. Offshore there is diving, birding and wide panoramas of sea and sand nearly without human intervention. Belize above water is mystical and magical, too! You can wake up to a soft breeze of cool mountain air or the warmth of the sun on a beach or a coastal plain. The sheer variety of wildlife is breathtaking. Here is the refuge of the jaguar, the tapir and the white-tailed deer. In Belize, there are more than 300 species of birds, 150 varieties of orchids and more species of butterflies than in the U.S. and Canada. Adventurous travelers

Above: Walls such as this one abound around all three of Belize's atolls—Lighthouse Reef, the Turneffe Islands and Glover's Reef. Typically, the walls are decorated with profuse sponge and coral formations, patrolled by abundant fish populations and bathed in warm, clear waters.



Looking

Topside or



Above, clockwise: A magnificent sunset viewed from one of Belize's palm studded cayes; a diver examines a gorgonian; the Belize Zoo displays native animals in natural settings; Caracol is the country's major Maya site and is accessible to visitors.

will find rivers, mountains, estuaries, jungles, waterfalls and deep limestone caves. In Belize, nature is always on center stage.

ARRIVAL AND INTRA-COUNTRY TRAVEL

TACA, a modern airline of Central America, services Belize daily with a fleet of Boeing 737 and 767 jets. From the U.S., flights can be initiated from eight gateways, including the coastal cities of Miami, Houston and New Orleans. TACA provides uncommonly good single class in-flight service, including free cocktails, a choice of entree, complimentary after-meal liquor and often, an in-flight movie. You arrive at the Belize International Airport for Customs and Immigration, usually a short procedure that requires a U.S. passport and entry form. From the International Airport you can fly onto your final offshore, coastal or inland destination via three excellent intra-country airlines (twin engine conventional aircraft) or you can take a short taxi ride to Belize City (including the town docks) 15 miles away. There is also a municipal airport in Belize City.

From Belize City you will ultimately want to get offshore. You may do that with a quality live-aboard or by dayboat from one of several leisure class resorts on or near the coast. Many divers will fly on to Ambergris Caye, Lighthouse Reef, Placencia or some other offshore resort area on an island or along the mainland coast. From Belize City, offshore flights usually take from 15 to 30 minutes; boat transfers from one to three hours.

THE BELIZE DIVING ENVIRONMENT

Belize's underwater landscape is rich and varied—a tapestry and range of diving that exceed every other Caribbean dive destination in diversity, system and scope. A single description is simply not possible owing to the vast offshore realm. The total dive area is immense: 170 miles north to south and 35 miles east to west, encompassing every kind of reef system—patch, fringing, barrier or atoll—known to nature. The densest and most continuous portion of barrier reef lies along a natural fault line some 12 to 25 miles offshore. This reef tract begins at the northern end of the country, at Ambergris Caye, and continues nearly uninterrupted through a series of small, sandy cayes offshore.

In between are another 100 islands and cayes bordering or close to the reefline. The dive areas along the barrier reef include shallow sea gardens, pinnaced mid-reefs and deep, precipitous walls. Along the reef crest are mountains of corals segregated by sinuous sand channels—huge protrusions of ancient reef capped with a colorful, living fringe of hard corals, soft corals, sponges and bryozoans. In many locations, the barrier reef forms a continuous wall, sloping, vertical or undercut in its descent toward the abyss.

The mid-reefs and walls are capped by a great assortment of sponge types of every conceivable color and structure. Prominent residents of the Belize Barrier Reef wall are yellow and gold tube sponges in squat and elongated shapes. In places, these sponges often protrude from the wall in

for Adventure

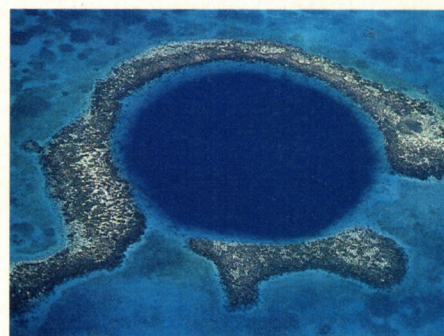
Under the Sea, You'll Find It in Belize.

lengths of six feet or more. Also common are bulbous orange sponges, huge basket and barrel sponges and rope sponges in riotous colors mixed and mingled with deep water seafans and bushes of black coral. This wall experience is so common to the Belize Barrier Reef that it can be experienced at hundreds of sites offshore. The shallow reefs are a combination of striated formations and clusters or patches of coral protruding from a white sand bottom. These usually form a natural trail or route that divers meander through on their return to the boat from the wall. This transition from the drop-off to the coral garden provides a progressive variation in depth from very deep to very shallow, often within a short swim.

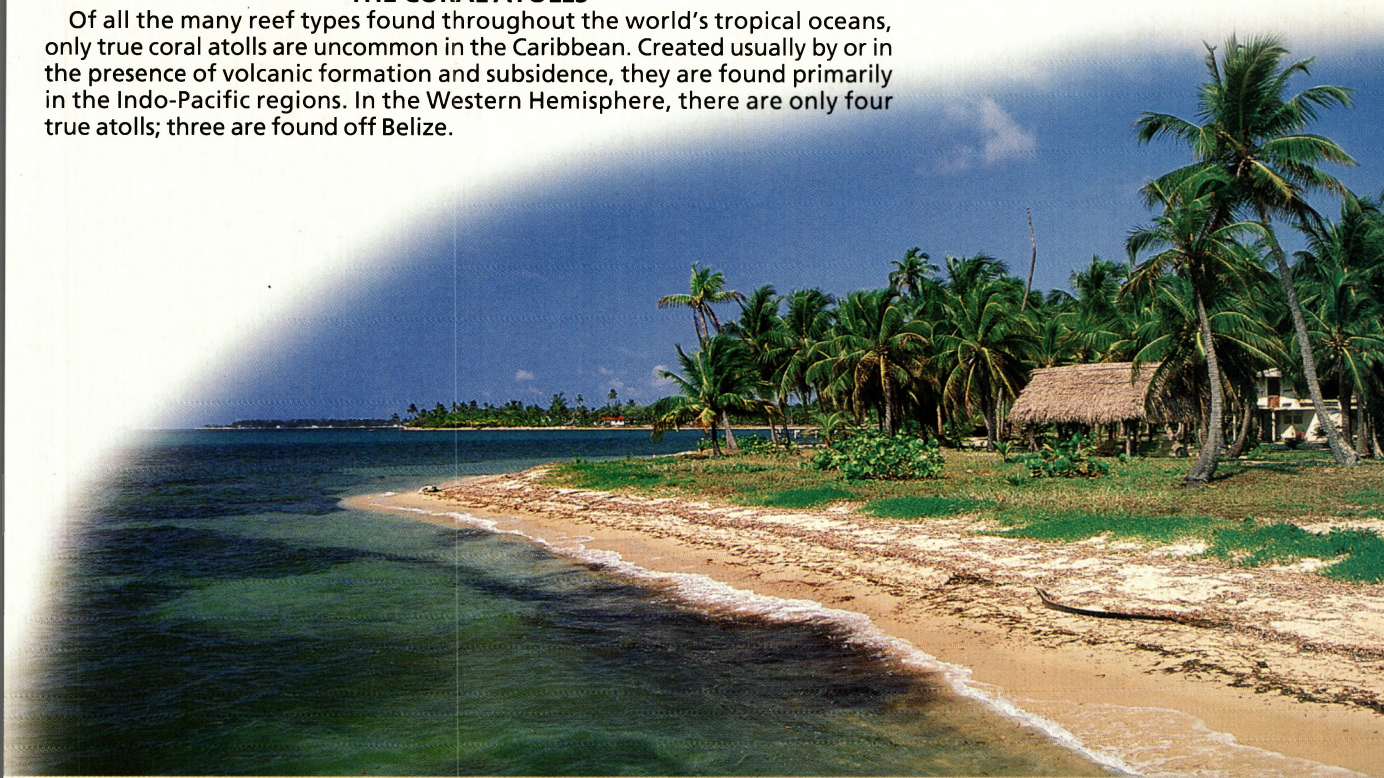
The variety of marine life is among the best in the Caribbean. Owing to the north/south transect of the barrier reef (effectively connecting the far reaches of the Caribbean) and owing to the easterly trade winds promoting a species transect from east to west, biodiversity is at its greatest in the Western Caribbean. Reef fishes, especially colorful tropicals, are generally abundant. Big fish are prolific, too. On nearly every visit to Belize I have encountered a spawning ritual, an unusual species or even an unidentified fish or invertebrate. Trunkfish mating, groupers spawning, nurse shark swarms, sponge spawnings and numerous interesting biological behaviors have all been discovered and photographed in recent years. Mantas, schooling eagle rays, friendly dolphins, turtles, huge green morays, giant jewfish and crevices and caverns filled with thousands of silver baitfishes are all frequently sighted.

THE CORAL ATOLLS

Of all the many reef types found throughout the world's tropical oceans, only true coral atolls are uncommon in the Caribbean. Created usually by or in the presence of volcanic formation and subsidence, they are found primarily in the Indo-Pacific regions. In the Western Hemisphere, there are only four true atolls; three are found off Belize.



Above: About 1,000 feet in diameter, the Great Blue Hole of Lighthouse Reef Atoll is more than 400 feet deep.
Below: South Placencia is a remote and sparsely populated wilderness.





Adventures aplenty can be found in Belize. There are tours to ancient Maya sites, jungle treks featuring rivers, caves and waterfalls and visits to botanical gardens and nature reserves (one has more than 200 butterfly species, another is a sanctuary for howler monkeys).

These are huge formations, 3 to 7 miles wide and 15 to 20 miles long, found along a series of faultlines outside the barrier reefline. Each is a separate oblong or circle of coral; deep water surrounds the outer fringe while the inner lagoon presents a pedestal for the support of hundreds of patch reefs. Each atoll contains nearly 100 known dive sites and certainly hundreds yet to be found. Many of Belize's best known dive sites are in or along the outer fringes of these atolls.

CENTRAL BELIZE

On the Caribbean coast, Belize City is the population center and air hub of the country. This charming and occasionally rustic port town offers English colonial architecture and the Belize River, with its coconut-lined shores. Downtown is the famous Swing Bridge, with its docking for sloops and fishing boats. Shanties with corrugated tin roofs and white-washed cottages surrounded by poinsettia and bougainvillea are reminders of an earlier era. Belize City is where you will find the largest and most amenity-conscious hotels in the country. Here is also the center for tour services and car rentals. As a result of the compressed geography and owing to several good highways, it is fairly easy to get most anywhere on the

mainland from Belize City. The Northern and Western Highways (and the south-bound Hummingbird Highway) depart the city like spokes radiating from the hub of a wheel. Good restaurants, lounges, snack shops and arts and craft stores are found throughout the city.

Belize City hotels and tour agencies can easily schedule mainland or off-shore sojourns. Beginning from a seaside dock, a series of scenic sand and mangrove cayes can be reached by boat 30 to 45 minutes. Here, divers will discover turquoise water and golden reefs just inside the barrier reefline.

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Summer
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Winter
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AMBERGRIS CAYE/NORTHERN CAYES

Flights from either Belize International or Belize Municipal Airport leave for Ambergris Caye nearly every daylight half hour. The northernmost and largest of Belize's many offshore cayes, Ambergris is also the country's primary dive destination and tourist Mecca. More than 25 miles long and less than one mile wide, Ambergris is a string of gem-like islets connected by a white sand beach. Toward the southern end is little San Pedro Town, a happy blend of fishing village and laidback tourist town. There are hotels, docks, restaurants, shops and fleets of dive boats but the streets are sand and no building is taller than the palm trees lining the seaward shore. The primary and obvious dive destination is the considerable tract of barrier reef that averages about one-half mile offshore. More than 40 sites are known, including **Hol Chan Marine Park**, a reef cut and coral garden noted for marine life. Deep sites near the drop-off include **M and M Caverns** and **Punta Azul Canyons**, huge coral formations with a labyrinth of caves and fissures leading to the drop-off. There are day trips and overnight trips to Turneffe Islands and Lighthouse Reef, including Belize's most famous dive site, the **Great Blue Hole**.

Ambergris Caye, actually a geographical extension of the Yucatan Peninsula separated by a narrow canal, begins a chain of northern cayes. Many of these can be reached by boat from Belize City; a few have airstrips. One of the best is Caye Caulker, just a few miles south of Ambergris Caye. Caulker is a quiet group of houses and a few small hotels that offer diving excursions. Other northern cayes along the barrier reef are Caye Chapel, Gallows Point Caye, Sergeants Caye, Goff's Caye and English Caye. Several of these are visited as dive and picnic sites out of Belize City.

Ambergris, the northernmost and largest caye on Belize's barrier reef, is the country's primary dive and tourist destination. More than 25 miles long and less than one mile wide, it features little laidback San Pedro Town on its southern end.



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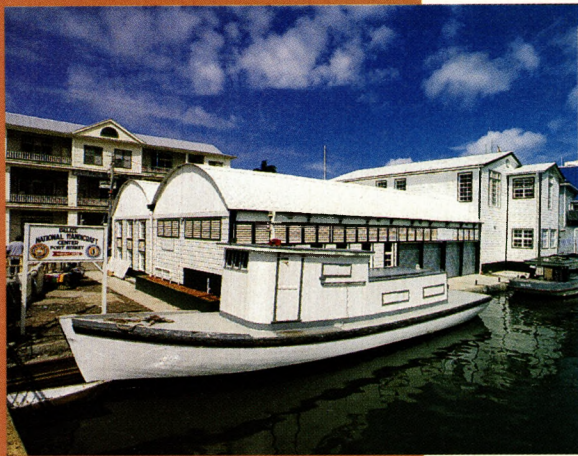
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The Belize Coastal Zone and Maritime Museum, in Belize City on Front Street, also doubles as a water taxi depot. Here, Belizeans and visitors board boats that will take them to offshore cayes.

SOUTHERN CAYES

There are more than 200 islands, islets and cayes that stretch along the barrier reef. This string of cayes—some of them no more than sand spits or clumps of mangroves, others with minor development—become progressively less inhabited and more serene from the middle toward southern Belize. A few feature cottages and cabañas with a dive operation and custom dive boats. Wilderness wall sites rarely visited by groups of divers include **Black Beauty** and **Silversides**, two standout sites near South Water Caye.

PLACENCIA

The far southern portions of Belize, both on and offshore, are the least commercialized, most remote and among the most sparsely populated sections of the country. This area is not, however, without several small but complete dedicated dive resorts.

Placencia is a long, narrow strip of sand and palms—a sliver of tropical paradise that barely attaches to the coast of southern Belize. Here is a south seas wilderness that combines a little fishing village with a small cottage resort community. Originally founded by refugees from religious intolerance, pirates and adventurers, today it is populated by a combination of Black Creoles, white and mixed escapists and Black Caribs (Garifunas). Placencia may well be the perfect place for those looking for pure tropicality.

To the southeast of the tourist community is a Creole village without so much as a main street. A concrete path meanders through stilt cottages and coconut palms toward the sandy shore. To the northwest is a small Garifuna village and beyond, back on the coast, are the Cockscomb Mountains, a range of jagged peaks reaching for the tropical sky.

To the east is a panorama of sea and a line of low-lying cayes barely visible on the horizon. From Placencia, the diving is different and quite varied. This

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Ambergris Caye, Belize

far south, the coast and barrier reef are separated by as much as 20 miles. This means about a 45 minute boat ride to even the closest reefs; however, there are many special sites, most of which are rarely visited by divers. Around the cayes are a series of shallow to middle depth mini reefs and patch corals with numerous, interesting invertebrates. A little farther out is a version of the drop-off that truly represents wilderness diving. Here you will see many Belize signatures compressed into a single dive and some sites rarely seen elsewhere. Pristine hard and soft corals are found around **Moho Caye** and **Laughing Bird Caye**. There is an airstrip on Placencia with daily flights to and from Belize City.

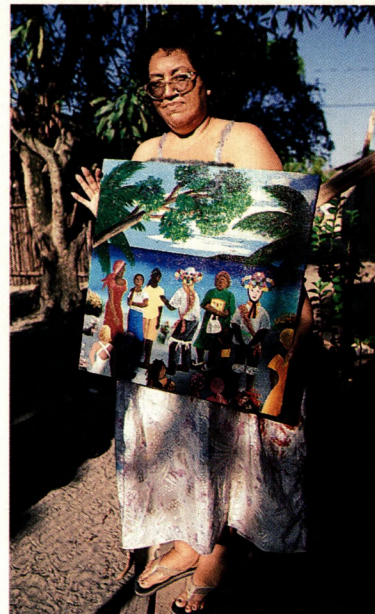
THE OFFSHORE ATOLLS

Many will say Belize's greatest diving spectacles are around the country's three enchanting coral atolls—Turneffe Islands, Lighthouse Reef and Glover's Reef—between 30 and 60 miles off the mainland. The most spectacular overall view of these atolls is from the air. From an altitude of several hundred feet the colors change dramatically with water depth. In the lagoon, the water is lime-green with golden patch corals visible everywhere. At the outer edges of the lagoon the atolls are flecked with striated islets, some with mangroves and others speckled with palms. Around the fringe of the atoll, the surf foams at the edge of a continuous reef that circles the lagoon like a golden bezel. On the outside, the ocean turns a deep cobalt blue as the water plunges to 1,000 feet or more.

TURNEFFE ISLANDS

The Turneffe Islands is the largest of the three atolls and is centrally placed, closest of the trio in distance from Belize City. The Turneffes are dominated by purely mangrove islands, a hint at the extreme biological productivity of this verdant atoll. There are more than 70 named dive sites now surrounding Turneffe, most of them with permanent moorings. Although the atoll is best known for wall diving, there are many shallow sea gardens excellent for snorkeling and scuba diving inside the fringing reef. There are large concentrations of soft corals, seafans, tube sponges and hard corals along the shallow reefs. On the leeward side is the wreck of the *Sayonara*, a small cargo boat

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One of the signatures of Belize diving is its colorful sponges. The walls are festooned with them. They grow large here and, entwined with various corals, produce exotic underwater bouquets that rival the most elaborate a topside florist could create.

that sank in 1985—a good spot for day or night diving. Perhaps the highlight of the Turneffe Islands, known to be one of the best dive sites in Belize, is a spot called **The Elbow**, at the extreme southern tip of the atoll. Seas can be rough and strong currents are common, making this an advanced dive, but the sights are magnificent. Here, I have regularly seen enormous schools of grunts, groupers, snappers, spadefish and jacks: It is a fish-filled spectacle not soon forgotten. Many sites along the eastward side of the atoll feature craggy drop-offs laced with sponges and black corals and nooks and crannies where turtles and nurse sharks like to hide.

LIGHTHOUSE REEF

Lighthouse Reef is the farthest away but the only atoll with an airstrip (on an island at the northern end). The atoll is almost 20 miles long and from one to two and a half miles wide. It is pure coral reef and low lying sandy islets—a ring of more than 40 miles of pristine reefs with precipitous, mostly vertical walls to the outside.

The two most famous dive sites on Lighthouse Reef are the **Great Blue Hole** and **Half Moon Caye Wall**, the Grand Canyon and Mount Everest of Belize's underwater world. From the air, the Great Blue Hole looks ominous—a nearly perfect dark blue circle 1,000 feet in diameter in the center of the shallow lagoon. Formed during the last Ice Age more than 12,000 years ago when the cavern was exposed owing to a lower sea level, the blue hole today is covered by sea water more than 400 feet deep. The Great Blue Hole dive experience is like no other on earth. You plummet into a deep water infinity, eyes searching for something to focus on. All of a sudden, at a depth of 110 feet, huge stalactites, some more than 30 feet long, dangle from the underslung lip of the blue hole. Practically devoid of marine life, the descent is like a visit to a strange and forbidden planet.

Half Moon Caye, at the southeastern tip of Lighthouse Reef, is a popular picnic site and is well known for its protected (national park) colony of red-footed booby birds. Below water, there are several wonderful sites associated with Half Moon Caye Wall on the oceanside of the islet. The drop-off here

Charming beachfront villas on a private Caribbean island add a touch of luxury to a resort dedicated to serious divers. As the only hotel on Lighthouse Reef Atoll—world famous for its Blue Hole—Lighthouse Reef Resort boasts a private airstrip, the best beach in Belize, air-conditioning, local cuisine and friendly people as well as 42 miles of pristine walls and reefs that will convince you that you have "dived and gone to heaven."

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has the distinction of beginning, in places, in only 30 feet of water. Dropping seaward from the reef crest, divers float over a blue water infinity, the coral wall decorated with every color and shape of sponge and coral imaginable. Piercing the wall is a continuous series of tunnels that lead to sloping channels of pure white sand looking like a snowy avalanche. Spotted eagle rays, jacks, turtles and other pelagics are frequently seen over the drop-off. Similar sights are available at the northern end of the atoll where the drop-off is a little deeper but falls in a series of interesting plateaus toward the abyss.

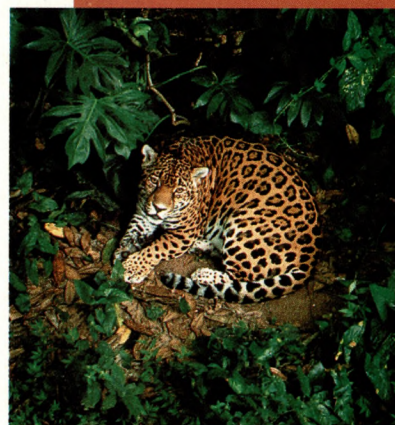
GLOVER'S REEF

Glover's Reef is the most southerly of the atolls and the one farthest from Belize City, factors that contribute to its mysterious and mystical appeal. The atoll is 15 miles long and 4 miles wide and has the distinction of a slightly deeper lagoon, with more than 700 patch reefs. There are a few beautiful, coconut-crowded islets toward the southern end; otherwise, Glover's is a unique wilderness, even for an atoll. The mystique here is the unaccountable numbers of shipwrecks that have accumulated along the outer reef. The real pleasures of diving this atoll have to do with its pristine quality and the variety of reef topography. Reef sites such as **Elkhorn Crossing** display Glover's exquisite shallow gardens while wall sites such as **Hole in the Wall** and **Gorgonia's Gallery** feature excellent marine life and huge spurs of coral that seem to compete with each other in size or shape.

MAINLAND ADVENTURES

Belize is becoming widely known as one of the world's great ecotourism destinations above water as well as below. A distinct advantage for scuba divers is the ability to add day trips or specialty tours to the Belize mainland involving short times and distances. There is a networking among dive resorts, inland resorts and specialty tour services that can arrange a day trip or overnight visit from almost anywhere to almost anywhere in Belize. Specialty tours are diverse and memorable, with sites and discoveries centered around Belize's primary assets—the country's nearly unlimited natural attractions.

The Cockscomb Basin Wildlife Sanctuary is in southern Belize. It was declared a forest reserve and no hunting area in 1984 to protect the large jaguar population and other wildlife. The area became a sanctuary in 1986 and was expanded in 1990. It now contains more than 100,000 totally protected acres.



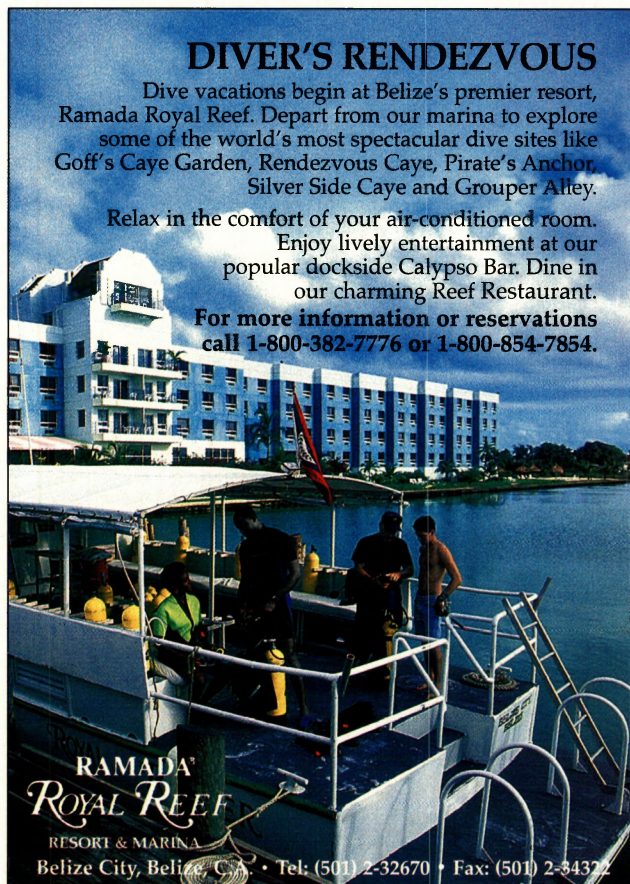
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Belize encompasses part of the heartland of the ancient Maya, the most advanced and prolific civilization the Americas have ever known. Archaeological vestiges of the Maya remain in the form of temples, courts and plazas. There are 15 sites that are open to visitors, several of which are still quite spectacular.

These include many ancient Maya sites, interesting indigenous cultures and the ecology of the rivers, rain forests and other tropical systems. Throughout the Belize interior are numerous small, charming and appropriate jungle lodges.

SELECTED ENVIRONMENTAL ATTRACTIONS

National parks and conservation areas occupy nearly one-third of the total area of Belize. Several excellent examples of ecotourism at work and an environmentally sensitive zoo are reached in a relative short drive from Belize City (tours are available daily).

Belize Zoo and Tropical Research Education Center: This is the easiest and most educational wildlife sojourn in the country. Jaguars, tapirs, monkeys, toucans and other icons of the Belize wilderness are housed in large environmental enclosures protected by wire fences. Informative and often humorous signs identify critters and habitats.

Bermudian Landing Community Baboon Sanctuary: One of the best examples of true ecotourism in the Americas is the privately-operated Baboon (actually howler monkey) Sanctuary, in Central Belize.

Cockscomb Basin Wildlife Sanctuary: This is the world's first and only jaguar (*Panthera onca*) reserve. The sanctuary is also home to a wide variety of forest flora and fauna. Nearly 300 species of tropical bird have been identified in the Cockscomb.


Crooked Tree Wildlife Preserve: A vast expanse of lagoons, marshes and waterways. Water birds include the Jabiru stork, the largest bird in the tropics with a wingspread of 10 feet.

Guanacaste Park Nature Reserve: Named after a huge Guanacaste tree that grows there, this attractive, easily reached reserve is home for a rich population of tropical birds and plants.

Ixchel Tropical Research Foundation: A botanical garden that features the healing properties of indigenous plants as prescribed and used for centuries by Maya leaders.




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Rio Bravo Conservation and Management Area: An extensive area of tropical forest with excellent opportunities for wildlife viewing in northwestern Belize.

Shipstern Nature Reserve: A protected environment of 20,000 acres harboring many waterbirds and more than 200 species of butterflies.

SELECTED MAYA SITES

It is now understood that Belize encompasses part of the heartland of the ancient Maya, the most advanced and, still today, the most prolific civilization the Americas has ever known. Archaeological vestiges of this great group, in the form of towering temple-pyramids, courts and plazas, dot the Belize countryside.

Altun-ha: This is the easiest major Maya site to reach, only 34 miles north of Belize City. There are several pyramid complexes, including the Temple of the Masonry Altars where the largest single piece of carved jade was found.

Xunantunich: Also an easy site to reach; just off the western highway close to San Ignacio. The major pyramid known as El Castillo features a prominent celestial skyband in high stucco relief.

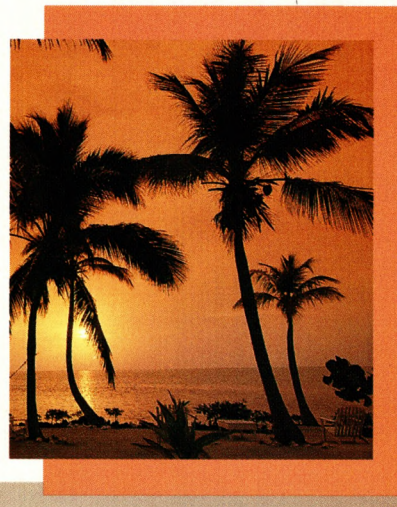
El Pillar: A site in the Caye (western) district that features an excavated architecture and a physical connection to a sister site in nearby Guatemala.

Lamanai: A visually spectacular site that features one of the longest periods of continuous population in the ancient Maya world. At the edge of the vast New River Lagoon, Lamanai portrays an authentic "lost in the jungle" look.

Caracol: The largest ancient site in Belize. This is an extensive complex of multiple pyramid-temple complexes on the Vaca Plateau. The 145 foot tall Caa-na pyramid is the tallest manmade structure in Belize. Caracol once had a population of more than 200,000 people.

Lubaantun: This is the best Maya site to visit in southern Belize. The complex is best known for its unusual construction of dressed stone blocks that fit together without mortar.

The end of a perfect diving day in Belize often includes a spectacular sunset. The dive area covers 170 miles from north to south and 35 miles from east to west. It includes three atolls, a barrier reef and numerous cayes, which harbor an incredible variety of marine life—among the best in the Caribbean.



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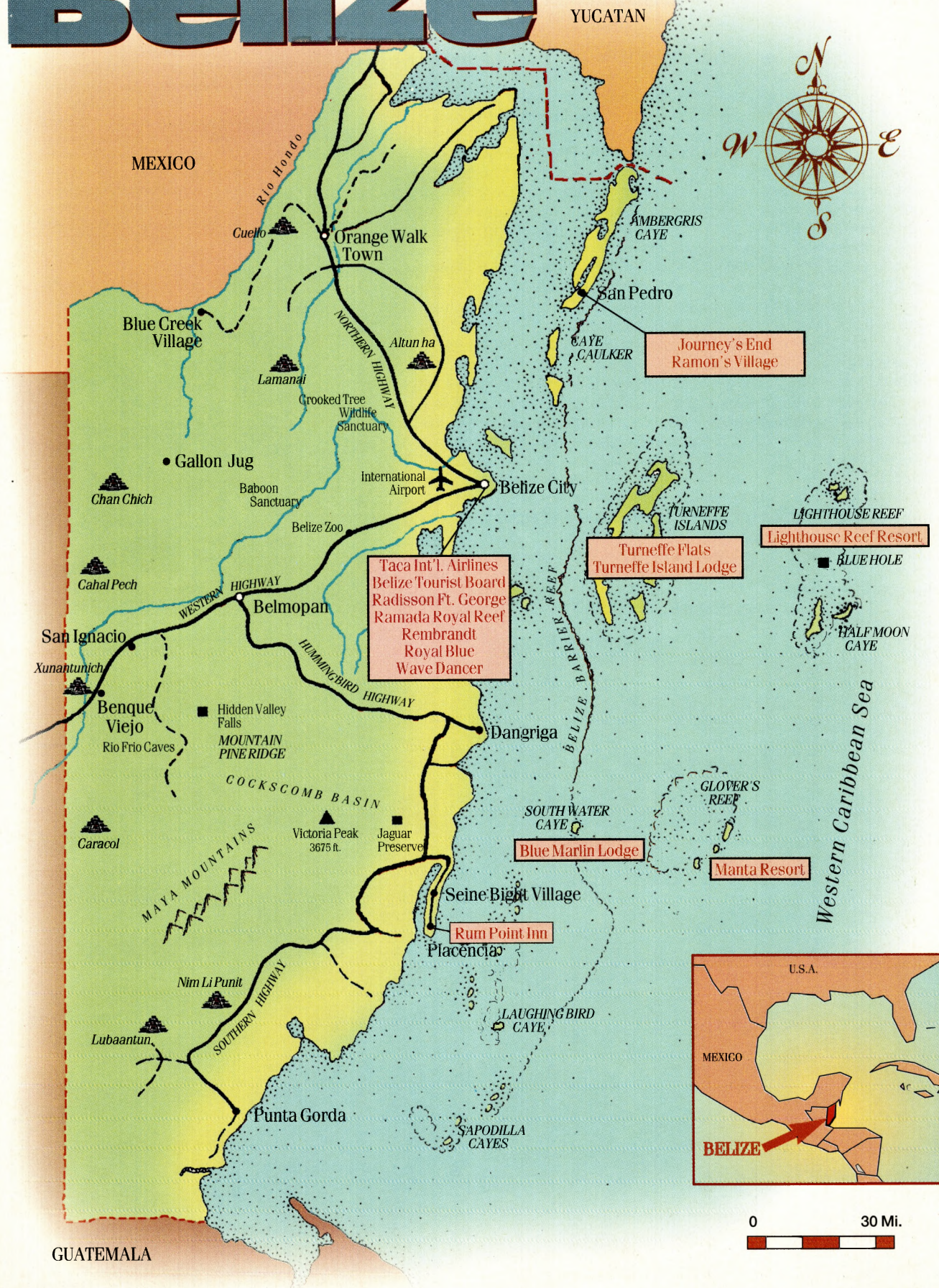
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BELIZE CALENDAR OF EVENTS

January

Annual New Year's Eve Bash at Lion's Den, Big Daddy's Discotheque, Tackle Box Bar, Purple Parrot Bar and Tarzan's Discotheque.

February

San Pedro Carnival—Slowly evolving from slapstick fun using powder, flour, lipstick and paint to tease people, to a more traditional Mestizo carnival made up of competing *comparsas* (special dances).

March

Baron Bliss Day—Celebrations held nationwide to honor this great benefactor of Belize. Because of his love for the sea, a harbor regatta is held in front of the lighthouse where he was buried. Horse and cycle races are also held.

April

Good Friday—Special Catholic Church services. Beginning at 3:00 pm, most villagers participate in a procession carrying the cross through town.

May

Dia de las Madres (Mother's Day) is celebrated with a religious ceremony in the evening followed by a gala dinner at Central Park with cultural presentations.

June

Feast Day of St. Peter—San Pedro. Honoring St. Peter, the patron saint of San Pedro. Early morning boat parade. Boats and fishermen are blessed, a special mass is held and a fiesta/jump-up follows.

August

International Sea and Air Festival—San Pedro. A festival of music, dance and foods from Belize, Mexico and the Central American countries.

September

Independence Day—Numerous cultural, religious and sporting activities a couple of weeks before St. George's Caye Day.

St. George's Caye Day—Celebrates and commemorates a battle in 1798 when the Spanish were defeated by slaves, Baymen and British soldiers. Around the country similar official ceremonies and parades take place. Caribbean-style carnivals, sporting activities, fire engine parade and pop concerts are held several days prior to this event.

October

Columbus Day (Pan American Day)—Regatta racing in Belize City.

November

Garifuna Settlement Day—Festival, mainly in the southernmost areas of the country, to mark the first arrival of the Garifuna in 1832 in Dangriga.

December

Boxing Day—Parties, dance, horse races and some Garifuna dances are performed.

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How to Get There

TACA flies modern Boeing 767 and 737 aircraft nonstop to Belize from Miami, New Orleans and Houston, with immediate connections for flights from Los Angeles and San Francisco.

Geography

Bordered by Mexico to the north and Guatemala to the west and south, Belize is approximately 750 miles and about a two hour flight from Houston, New Orleans and Miami.

Language

English is the official language and spoken most everywhere in Belize.

Currency

\$2.00 Belize = \$1.00 U.S.
Belize uses the same \$ sign.

Government

Belize has a 200 year history as a peaceful parliamentary government, democratically elected.

Passport

Passport required. No visa required for U.S. citizens with roundtrip tickets.

Telephones

Excellent phone service throughout most of Belize. The country code is 501. Cellular phones are also used throughout Belize.

Population

Approximately 200,000.

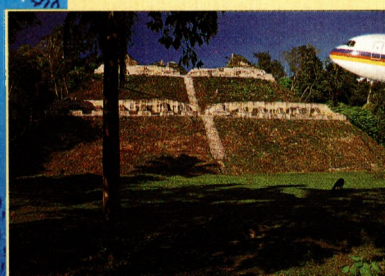
Climate

Mild, subtropical, with cooling Caribbean breezes. The average temperature of 79°F varies little throughout the year.

1996 GUIDE TO BELIZE

Text & Photography by Rick Frehsee
Design & Layout by Brandi Centeno

Photographs of Maya sites & artifacts arranged through the courtesy of the Belize Department of Archaeology & the Caracol Archaeological Project.



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Love at First Flight!

Rudi Selzer

Rudi Selzer, former director of tourism for the Cayman Islands Department of Tourism, died August 17, 1996.

Selzer was born June 22, 1938 in Vienna, Austria. In the 1960s he emigrated to Canada, where he worked for Pacific Western Airlines in Vancouver, British Columbia. The airline ran weekly charters to Grand Cayman and, in 1964, Selzer visited the Cayman Islands for the first time.

Shortly thereafter, he was offered a temporary job as assistant manager of a Grand Cayman hotel. He returned briefly to Canada but had fallen in love with the islands and returned in 1965 to launch a career in Cayman's hospitality and tourism industry that lasted more than three decades. He adopted the islands as his home and became a Caymanian citizen by grant of Caymanian Status.

Selzer was the first chairman of the Pirates Week Committee in 1977. His influence extended far beyond Cayman's territorial waters. He earned respect as a tourism leader in the Caribbean region during seven years as a member of the board of directors of the Caribbean Hotel Association, including a term as regional director. He later served on the board of regents of the Caribbean Hotel Training Institute.

He shared his growing tourism experience and expertise for 10 years with colleagues as a member of the board of directors of the Cayman Islands Hotel and Condominium Association. This included four terms as president.

In the early 1980s, Selzer served first as deputy directory of tourism and then senior assistant secretary. He then became the first director of trade and labor and made a tremendous contribution to this country by establishing policies that protect the rights of Caymanian workers while promoting employment opportunities for Caymanians.

In October 1990, Selzer was appointed director of tourism. As director he helped introduce innovative advertising programs focusing on diving and gave tremendous promotional support to the diving and watersports industry. His efforts earned him the Cayman Islands Watersport Operators Association's first Tourism Award last August as well as its only Honorary Lifetime Membership in the association.

Rudi Selzer was an extremely dedicated man, committed not only to quality in Cayman's tourism industry but also to promoting hospitality industry training, particularly for Caymanians. He will be greatly missed.

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Digging for Treasure Under the Sea

Constructing an Ingenious Device for Shipwreck Excavation

TEXT AND PHOTOGRAPHY BY HOWARD B. TOWER, JR.

Mel Fisher is credited with inventing the propwash technique during the '60s and it has been a tool of salvors for one-quarter century. Today, underwater archaeologists, who once shunned this tool as destructive, now outfit their vessels with "elbows." The propwash, also referred to as a "prop blaster," "blower" or "mailbox," is an elbow shaped pipe or tube that deflects an engine's propeller backwash toward the bottom at a 90 degree angle. If it has been properly designed and is used at a proper site, one that can be excavated with that particular sized blower, the deflected prop blast will quickly blow away sediments, exposing material, artifacts and fossils for recovery. Let's study this excavation tool in detail.

Remember that a propwash, like a dredge, moves submerged bottomland and therefore, impacts—to some degree—the aquatic environment. Before constructing and using this instrument, you or your attorney should determine what laws, regulations, licenses or permits govern its intended use(s) at the site(s) in question. Such regulations may be federal, state or local. Perhaps there are none at all. It all depends on the location of your site.

Propwashes have been designed to function with a variety of vessels and engines ranging from a 12 foot johnboat with a 9.9 hp engine—the first one I used—to small ships 175 feet long, with 6 foot screws. It is not my intention to outline specific engineering standards/specifications for the propwashes I use or for the blower you wish to build. This simply cannot be done, for its construction must be tailored to the design of your boat, its engine (size, type and configuration) and your particular needs/situation. Let's look

at these factors and discuss the forces/stresses that must be considered in designing and turning a propwash.

As mentioned, a propwash is an elbow shaped section of pipe positioned and secured directly behind a propeller so back

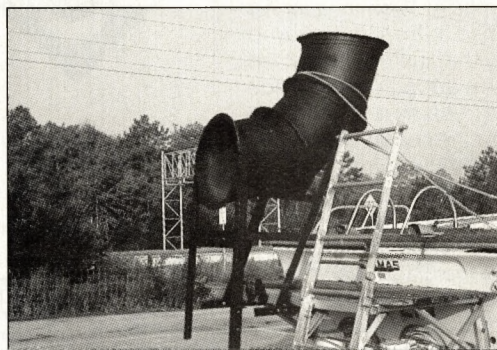
blast from the prop is captured and focused toward the bottom. When in use, powerful forces/stresses are unleashed that directly affect the vessel, persons on board or, heaven forbid, divers and swimmers.

The elbow must be substantial

enough to withstand forces produced when the prop blast is channeled into the pipe and directed downward. A detailed discussion of these forces and related engineering formulas is beyond the scope of this article. But, here are points to consider:

The pipe (elbow) must be of a proper diameter and positioned far enough behind the propeller to receive and deflect the greatest possible volume of water. Also, keep in mind that water cannot be compressed. The prop blast is not squeezed into the elbow. Only the amount of water that can flow through the pipe without compression will enter. And, the diameter of the elbow should be large enough to accommodate all the water (prop blast) moved by the propeller.

For example, an elbow with an internal diameter exactly the same as the propeller and positioned immediately behind it will not be an effective propwash. The propeller's proximity to the elbow will inhibit the amount of water that can enter and, if prop speed is increased, water flow will be choked by the pipe, which can only accept a certain volume. As mentioned, water cannot be compressed.



The propwash—also referred to as the prop blaster, mailbox or blower—is an elbow shaped pipe that deflects an engine's propeller backwash toward the bottom at a 90 degree angle.

If money is no object, you can hire an engineer to calculate the proper diameter of the elbow and determine its precise positioning behind the propeller. Such calculations take into consideration the size/pitch of the propeller and proposed speeds. But, if you are on a budget, a good rule of thumb for sizing/positioning the elbow is this: The internal diameter of the elbow should equal approximately one and a half times the diameter of the propeller and the distance between it and the propeller should equal two-thirds the diameter of the prop.

For example, when building a propwash utilizing a 14 inch propeller, construct an elbow 20 to 21 inches in diameter and position it 10 inches behind the prop. Your propwash will not be as efficient as one designed by a professional engineer but it will be effective. Also, remember the key to a powerful propeller wash is propeller speed. The faster, the better.

Let's look at two other considerations in designing elbows. If at all possible, the elbow should be rounded, as opposed to a sharp 90 degree angle. This reduces friction and turbulence within the tube. However, fabricating a rounded elbow from sheet metal is expensive and requires a professional sheet metal worker/shop. Your next bet, and a much cheaper method, is constructing your elbow with three 30 degree angles to complete the 90 degree bend. Yes, you will lose some efficiency but it will be much cheaper to build.

The second factor in elbow construction is quality of construction materials. As mentioned, directing a propeller's backwash into a pipe and deflecting it downward unleashes powerful forces. Therefore, an elbow constructed of substandard or shoddy materials will not hold up and may be dangerous to divers, the boat and topside personnel. In one instance an elbow constructed from segments of 55 gallon oil drums collapsed around the spinning propeller. An intense down draft produced a powerful suction, causing the thin steel to crumple. The result was major engine damage.

The following suggestions will help avoid difficulties.

Before constructing an elbow or other portions of the propwash assembly, consult with someone knowledgeable about steel metal, its fabrication and welding. Explain your purpose and intentions; listen and accept advice. A good source for such information is instructors at vocation/skill centers offering sheet metal/machine courses to young people. Many such schools/centers will construct your elbow as a class project, charging only for materials. I had an elbow, 20 inches in diameter, manufactured of the finest mate-

(Continued on Page 158)

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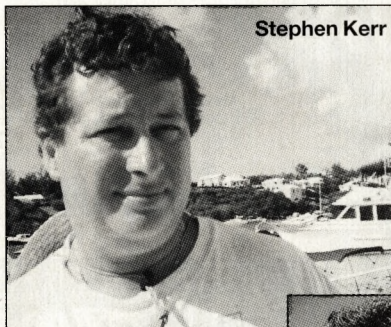
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TEXT AND PHOTOGRAPHY BY GERI MURPHY



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Michael Burke

Kerr has been diving Bermuda waters for 15 years and shooting both underwater photos and video for the last 10. He is co-author of *Wonders of The Deep*—a book about Bermuda diving that is beautifully illustrated with many of his photos. His undersea images are widely published in many books and periodicals about Bermuda. Kerr will be offering a variety of services, including custom underwater videos, group videos and custom still photography.

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BELIZE

(Continued from Page 74)

and dived of all the atolls. Most of the diving is around the southern part, along the vertical walls off Long Caye and Half Moon Caye. Pelagics are common off **Half Moon Wall** because it is in open water. From the air you can clearly identify the drop-offs and put into perspective the underwater life and walls that are abundant throughout Lighthouse.

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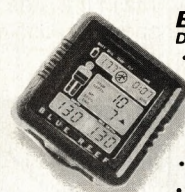
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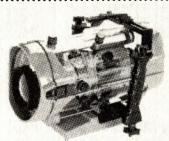
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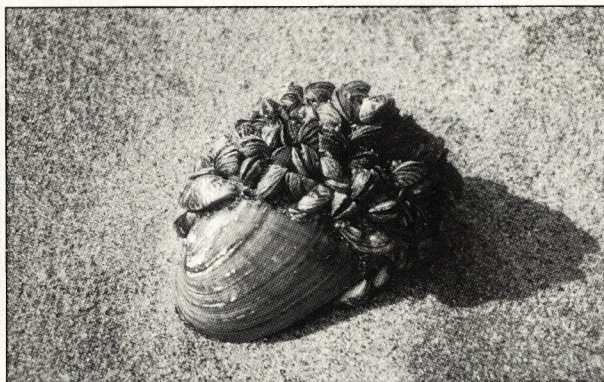
Zebra Mussels

Invade the Great Lakes

BY JOHN ALBERGO

Zebra Mussels (*Dreissena polymorpha*)—small striped clams—first showed up in Lake St. Clair around 1985 or 1986. One or more freighters picked up freshwater ballast containing mussel larvae, or veligers, in a European port

pumps, water intake pipes, piers and other living creatures. They may be the ruin of many historic and well-preserved wrecks in the Great Lakes and, at present, there is no way to control or eliminate them without damaging the environment.



photos/courtesy Ohio Sea Grant

Left and below: Zebra Mussels (*Dreissena polymorpha*) are small striped clams that arrived in the Great Lakes via the freshwater ballast of European freighters in 1985 or 1986. They possess the ability to attach themselves to any flat surface and multiply quickly. They have become the scourge of boaters yet improve water visibility for divers.



and discharged the water into Lake St. Clair. The mussels quickly spread to Lake Erie. (A mature female produces more than 30,000 eggs per season.) As of 1990, they had made their way to Lake Michigan and are now invading the Chicago coastline.

Zebra Mussels are very small and not very edible. They attach themselves to almost everything, including boat hulls,

Zebra have a very powerful adhesive on their byssal threads, small fibers that protrude through an opening in their shells. This allows them to latch onto almost any hard surface. When they adhere to other living creatures and begin breeding, they smother their hosts. They also accumulate bio-toxins, which scientists speculate could eventually work

(Continued on Page 153)

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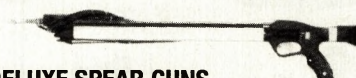


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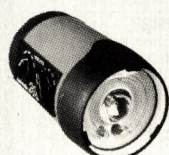
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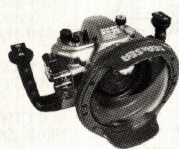
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TRUK WRECK FOUND!

Nearly three years ago, a team led by renowned wreck hunter Klaus Lindemann found what he describes as the last major undiscovered WW II wreck in Truk Lagoon—the *Katsuragisan Maru*—resting in 240 feet of water in Northeast Channel. The wreck's depth and location were two of the reasons she remained undiscovered for so long. The other reason was the *Katsuragisan Maru* was not sunk during the U.S. aerial attacks of operation Hailstone, as were most of the other wrecks in Truk Lagoon. This ship went to the bottom weeks earlier.

To protect Truk Lagoon during World War II, the Japanese had placed a mine-field in North-east Pass. Unfortunately, information on the location of the mines was not disseminated to the Japanese merchant fleet. On January 4, 1944, the *Katsuragisan Maru* steamed into the pass and was almost ripped apart when she struck one of the mines.

Lindemann is the author of *Hailstorm Over Truk Lagoon*, which describes the events of Operation Hailstone: two days and one night (February 16 to 17, 1944) of raids by U.S. warplanes on the Japanese ships in Truk Lagoon. The team conduct-

ed the search for the wreck from the *Thorfinn*, captained by Lance Higgs.

The team used a unique sidescan sonar that offered numerous advantages, including its ability to tie into a Global Positioning System, allowing the team to pinpoint the wreck site.

Combining this with Lindemann's extensive research on the *Katsuragisan Maru*, the team was able to locate the wreck in a short time—about 20 minutes once underway.

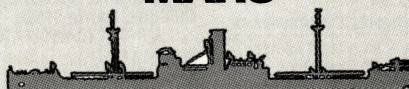
The *Katsuragisan* rests on an even keel, just outside the confines of North-east Pass, less than a mile inside the lagoon. She is extensively damaged, especially her superstructure, which is subject to the action of heavy ground swells. The blast from the mine collapsed her decks and may have taken a chunk out of the hull.

The wreck of this Japanese freighter has a single 4.7 inch bow gun and her holds contain war material, including trucks and rolls of fencing. Extensive

marine life grows on the hull and there are lots of fish surround her.

For more information, contact Klaus Lindemann, in care of BASF Indonesia, P.O. Box 2431 Gbr., Jakarta 1001, Indonesia; phone/fax (0062-21) 799-8129.

KATSURAGISAN MARU



SPECIFICATIONS

Type of vessel.....**Japanese freighter**

Length.....**285'**

Beam.....**42'**

Tons.....**2,427**

Propulsion.....**Coal fired steam engine**

Armament.....**4.7" bow gun**

Cargo.....**War material (including trucks and rolls of fencing)**

Date of sinking.....**January 4, 1944**

Method of sinking.....**Japanese mine**

Location.....**Truk Lagoon, Northeast Channel**

Depth.....**240' (200' to deck)**

Date discovered....**February 11, 1994**

ZEBRA MUSSELS

(Continued from Page 150)

their way up through the food chain. "Zebra Mussels are decreasing the threatened and/or endangered clams and fish in the river systems," said Christine Pennisi, Marine Extension Educator at the Illinois/Indiana Sea Grant Extension, one of the organizations studying the problem.

Researchers originally believed any indigenous creatures that feed on phytoplankton or zooplankton were in danger of losing their food supply, since one Zebra Mussel can filter one liter of water a day. (This is why many divers have noticed increased clarity in areas infested with Zebra Mussels.)

"There have been changes at every level of the eco-system. We're now seeing a decrease in the Yellow Perch population in Lake Michigan, possibly due to Zebra Mussels," said Pennisi.

The more severe, and much more immediate, impact is economic. European utilities have been experiencing problems with Zebra Mussels since the late 1800s. They clog and sometimes shut down water filtration plants and industries that rely on the intake of fresh water. Great Lakes utilities have reported reduced pumping capacity

and occasional shut-downs. Pennisi says Zebra Mussels thrive in cold, dark places. This makes intake pipes an ideal home. Since mussel colonies form in layers, they can choke off any opening as long as they have a hard surface on which to anchor themselves. And, it's getting expensive, according to Pat Charlebois, non-indigenous species specialist for the Illinois/Indiana Sea Grant Program. "As of 1995, various facilities around the Great Lakes have spent an estimated \$120 million on control and clean-up of Zebra Mussels," she said.

Boaters have similar problems. Mussels clog cooling water inlets, causing overheating and engine damage. Shells drawn into the engine could result in abrasion of cooling system parts, especially impellers. Zebra Mussels also accumulate on docks by the millions. Pennisi has seen cases where Zebra Mussels have actually caused floating docks to sink!

POSSIBLE WRECK DAMAGE

Wrecks are also severely impacted. The *George Morley* is a 192 foot, wooden hulled coal freighter that sank in 15 feet of water near Evanston, Illinois, in 1897. Now, almost every inch of wood and many metal parts are completely encrusted with Zebra Mussels. The

Avenger Torpedo Bomber, near Chicago's 67th Street pumping station, is in 40 feet of water. Large sections of its fuselage are now encrusted, although the windows are still clean.

A wooden device known as a paravane, left over from World War II, had been resting undisturbed in a commercial vessel turning basin at the mouth of the Chicago River for years. The metal parts are now completely encrusted and some of the wood now hosts small colonies of Zebra Mussels.

The advantage for divers, and perhaps the dive industry in Chicago and surrounding areas, is that the waters around these wrecks have become much cleaner. The downside is the potential for long-term damage to historic wrecks. While there is no solid evidence, Pennisi suspects severe damage to these wrecks, some of which date back to the advent of Great Lakes navigation, is inevitable. Aside from possible damage through direct contact with the mussels, more ultraviolet rays from the sun are getting through to the wooden and metal structures resting in shallow waters, which could speed the deterioration process. The additional sunlight is also stimulating the growth of algae, which has begun to affect the taste, though not the potability, of the drinking water in some areas.

(Continued on Page 157)

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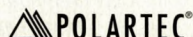
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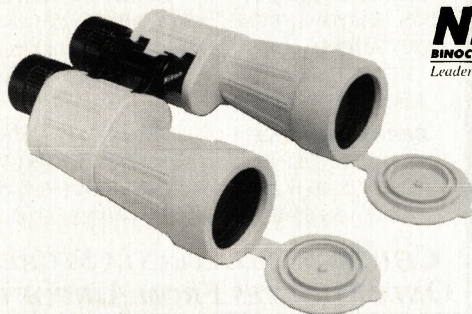
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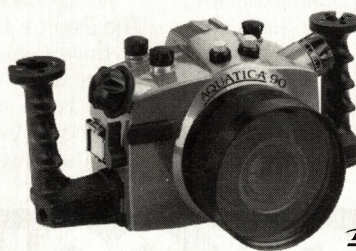
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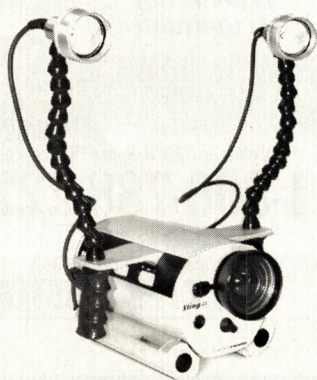
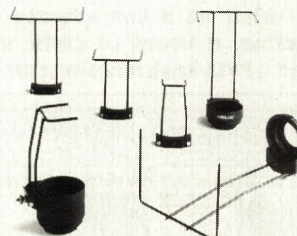
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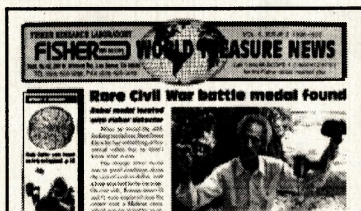


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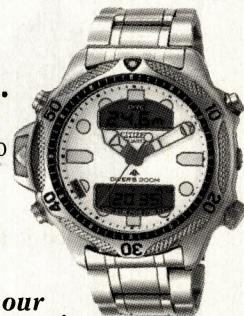
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ZEBRA MUSSELS

(Continued from Page 153)

DIVERS BEWARE

Running across a colony of Zebra Mussels can be compared to an encounter with a coral reef, except on a smaller scale. The shells are very hard and very sharp. Contact with bare skin can leave something akin to paper cuts. Even barefoot sunbathers have to be wary of Zebra Mussel shells washed up on beaches.

MUSSEL CONTROL

Unfortunately, the only methods of controlling Zebra Mussels that have been discovered are either infeasible or pose a threat to the environment. According to a report by Fred Snider and Marian Brained of the Ohio Sea Grant College Program, prechlorination has been used in intake pipes but it raises concerns about toxic effects of chlorinated compounds to other organisms.

The report, *Zebra Mussels in the Great Lakes: The Invasion and its Implications*, stated that Zebra Mussels are sensitive to high temperatures. Researchers have achieved 100 percent mortality after five hours at 90°F, an hour at 98.6°F and only 15 minutes at 104°F. Generally, conditions considered unsuitable for Zebra Mussel growth are water temperatures below 45°F or above 90°F, currents greater than two meters per second or rapid water level fluctuations.

Some European and Russian industries use thermal control in early summer, late summer and late fall. Mechanical scraping and cold water flushing is sometimes used after a hot water treatment to remove debris from large encrustations. So far, chlorine is the most popular method among industrial facilities, says Charlebois.

HOW CAN DIVERS HELP?

What can the diving community do to prevent the further spread of *Dreissena polymorpha*? Obviously, scooping up handfuls of them and throwing them on the beach is futile because of their breeding habits. However, if you dive in an area that is infested, rinse all your equipment thoroughly in hot water. You may not see any shells clinging to your gear but tiny, transparent veligers may be hitching a ride. Leaving the gear out of water is not enough unless it's for about two weeks.

"Zebra Mussels can live up to 21 days out of water. If mussels are clinging to your gear when you go diving in another area or inland lake, you will transfer Zebra Mussels to that area," said Pennisi. *Do not rinse your gear in a basin*

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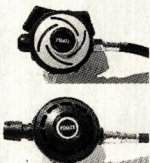
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ZEBRA MUSSELS

with a drain. There is a possibility the mussels on your gear could be transferred to your area's water treatment system. It's best to rinse your gear outside, away from sewers and drains.

Speaking at a meeting of the Rachel Carson Scuba Corps of Chicago in 1992, Pennisi said divers can provide a valuable service by reporting new Zebra Mussel infestations. Contact the Sea Grant extension nearest you and report sightings of Zebra Mussels. Researchers want to hear of new infestations, depths, water conditions and what the habitat is like (wreck site, rocks, piers, etc.).

Also, boat owners should conduct regular inspections. Run your hand along the hull. If it feels gritty, chances are you've got veligers. Wash the hull down with hot (110°F) saltwater and check the pumps, cool water inlet ports and other areas that are exposed to fresh water. *Do not* take your boat to another lake unless you're sure there are no veligers or mature mussels present. Many government agencies, such as your state department of conservation and local harbor authorities, have been advocating such measures to prevent the spread of Zebra Mussels. (Pennisi said she once received a phone call from a government official in British Columbia who asked if they should close their borders to boaters coming from the U.S. because of the mussel threat.)

PREDATORS

Zebra Mussels are preyed upon by several species of fish and waterfowl but the reduction of mussel populations is insignificant in many areas. Crayfish, Carp, eels and Sheepshead all feed on Zebra Mussels. An adult Crayfish can consume 100 mussels per day but Crayfish are ineffective predators in deeper lakes owing to lower water temperatures. In depths of up to 15 feet, waterfowl are the prime predators. European studies have shown that waterfowl predation rates on Zebra Mussels range from insignificant to as high as 32 percent during the summer and 90 percent during the winter.

THEY'RE HERE TO STAY

Even with precautions, the Zebra Mussel is presumed to be a permanent inhabitant of the Great Lakes region. We can only hope to prevent the spread to inland lakes and streams. According to the Ohio Sea Grant report, "There is little doubt that the Zebra Mussels' impact will be felt by great numbers of people who use the Great Lakes."

DIGGING FOR TREASURE UNDER THE SEA

(Continued from Page 141)

rials at a skill center in Jacksonville, Florida. The cost was \$100.

Also, it is a good idea to have reinforcing bands or flanges welded to the elbow around both ends and in the middle of the bend or where segments of the pipe are joined. The elbow I constructed was crafted from 16 gauge steel with reinforcing bands and flanges of 12 gauge steel. It consists of three segments that join at 30 degree angles and weighs 146 pounds. Yes, it's over-engineered but it safely channels the back blast from a 14 inch propeller, turning at 2,400 rpm, to the bottom. In 24 feet of still water, this tool can dig a sand crater 3 feet deep and 12 feet wide within 15 minutes. When in doubt, over-engineer.

Let me emphasize that structural requirements will vary with the size of your intended propwash. Gather as much expertise as possible prior to the actual construction. Total weight of the tool, elbow and structural assembly/support should be determined before installation, to avoid overloading your vessel.

Mounting/attaching the elbow to your boat must be tailored individually to its particular design, size and hull construction. Designs and methods are endless but here are points to consider. The transom (stern) will be placed under severe stress when the propwash is in use. Thus, the condition and construction of your boat's hull is extremely important. Your vessel should be examined by a competent individual for structural weaknesses and any problems should be corrected prior to installation of the propwash. Remember, stresses produced should be spread over a large area—the entire area of the stern, if possible. You are asking for trouble if stress/pressure is focused in small areas.

Let's look at the forces/stresses we are dealing with. The normal forward motion of your boat is held in check by anchors and the thrust produced by your engine/propeller is captured by the elbow and deflected down. Therefore, the stern, cleats and anchor ropes must absorb all the energy that normally propels the vessel forward. A poorly designed mounting and structural assembly for the elbow can buckle and/or tear away from the stern when the propwash is functioning. This can cause the elbow to fly up, damaging the boat and injuring personnel. As mentioned, get expert advice and labor prior to designing/construction/mounting your propwash. Again, when in doubt, over-engineer.

Design the support assembly so the elbow is hinged and can be raised when not in use. Or, make it detachable if it's

small, light and easy to handle. Also, it is very important to have a locking system—using heavy pins or bolts—to secure the elbow once it is in position for blowing or raised. If your engine is an outboard or has an outdrive, you must devise a method to keep the propeller properly positioned in front of the elbow.

As you can see, the aforementioned factors—type and design of your boat and its hull, engine and propeller specifications and your pocketbook—require any propwash to be individually designed for specific needs and situations.

When your propwash is ready, the next step is rigorous testing. My advice is to pick an easily accessible spot where you can determine the abilities and limitations of the tool. And, practice anchoring to hold your boat steady while the propwash is running. Don't work an important site until you know how to use it!

Let's discuss anchoring/securing and positioning your boat.

At least three anchors will be required, perhaps four—one extending from the bow, one extending almost directly out from each side of the stern and perhaps, a fourth anchor directly behind the stern. The anchors used for this purpose should be larger than those for normal anchoring. They will have to be set some distance from the boat in order to dig in and hold to the bottom with the blower in use. If you are working next to shore, a tree may suffice as one anchor point. Positioning a boat is not a one man job. You and your companions will have to work as a team. Through trial and error your group will develop quick and effective anchoring procedures tailored for your boat. Positioning the propwash is accomplished by manipulating (adjusting) the anchor ropes. If the water is dark or turbid, suspend a weighted line from the stern to the bottom, thus allowing a diver to check propwash positioning. Be certain ropes and cleats are in good condition prior to propwash activity.

Test your blower in a variety of depths and sediments (mud, sand, gravel, etc.). In each situation, start at low rpms and gradually work up to higher speeds. Study all aspects of the propwash during each test. Look and listen for signs of excessive stress and strain on your boat, elbow and mounting assembly and ropes and cleats. Examine all equipment after each test. If problems develop, stop testing and redesign, reinforce or restructure. In other words, go back to the drawing board. Think safety, safety, safety! Maintain a log of your results, capture data on each test. With every trial you and your team will gain skill and efficiency. Before long you will be able to peel away layers of sediments in a controlled manner.

Here are some very important safety

rules for running your propwash.

Never allow anyone in the water while the blower is running. People may get caught by swift, swirling water produced by the blower and be sucked into the elbow. The suction of a small elbow can seize arms and legs, where they will be "sliced and diced." Some individuals place heavy wire mesh nets around the intake to keep this from happening but the situation can be avoided if people stay out of the water. I realize a small propwash attached to a 10 hp engine and johnboat blowing in five feet of water may not be a great

personal threat but be safety minded.

Also, individuals should stay away from the stern area of the boat when the propwash is running, just in case something breaks under stress, causing the elbow to fly up.

Lastly, check the blower and boat before and after use. Look for loose bolts, excessive rust, cracks and wear—anything that indicates excessive stress or fatigue. Don't use the tool until repairs are made.

Many of you with modest propwashes (elbows less than 21 inches in diameter) will have occasions to extend their



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range/power. My advice is to construct a heavy canvas extension tube, which attaches around the base of the elbow. It should be the same diameter as the elbow with the opposite end weighted and held open by a ring or metal band. You will have to experiment with the length but four to eight feet is likely to be the most effective. This device only works in still water because current bends/twists the tube. When properly installed, the extension tube may increase the blower's effectiveness by 25 to 30 percent.

Propwashes, like firearms, motorcycles, cars, boats, scuba diving equipment and power lawnmowers, must be used with safety paramount in everyone's mind. Skill comes with practice. As you progress higher on the learning curve, your propwash, when legally used, will be a strong right arm, enhancing your salvaging activities. 🐟

Dive Notes

PRINCESS DIVERS EXPANDS FLEET AND ADDS NITROX: Peter Hughes Diving has added the *Curacao Dutchess* to its fleet at Princess Divers, the dive operation at Princess Beach Resort and Casino, on Curacao. The *Dutchess* is a Michael Fitz 41 custom dive boat. With the addition of the *Dutchess*, the Princess Divers fleet grows to three, including the *Curacao Princess* and the *Cat Dancer*.

The availability of nitrox and nitrox certification is another addition at Princess Divers. IANTD nitrox certification includes instruction, classroom materials and two supervised enriched air dives. Enriched airfills are free of charge throughout the remaining days of paid boat dives during the certification trip. Thirty-two percent enriched air is available for nitrox certified divers.

Peter Hughes Diving, Inc. is also adding nitrox and nitrox certification to several of its *Dancer Fleet* vessels. The *Moon Dancer* in the Red Sea will offer TDI nitrox certification. Thirty-two percent enriched airfills will be available for certified nitrox divers. *Moon Dancer* will also offer Dräger/Uwatec Atlantis I Rebreather certification and rental of rebreather units. The rebreather certification will include instruction, workbook and four rebreather dives. The rebreather rental will include nitrox cylinder and air bailout.

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CAYMAN GOLD

BY TY SAWYER

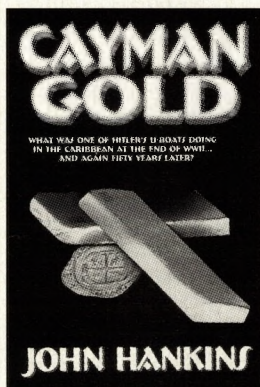
John Hankins, after years of meticulous research, has self-published his novel, *Cayman Gold*. What was described as "...the hottest read of the Summer!" is now the perfect book to add some tropical island intrigue to those dreary winter months. The novel is based on actual accounts of German U-boat

activities in the Caribbean during WW II. The story spans 50 years, from WW II to the present, and the majority of the action takes place in and around Grand Cayman and Little Cay-

man. Although based on known facts, the plot centers around a group of fictional neo-Nazis who return to the islands to claim property lost during WW II.

The historical thriller went into worldwide release in mid-July and has been received well in every available market. Author's Showcase on the Internet at <http://www.light-communication/author/hankins/cayman.htm>, will highlight the novel and U-Web, a Web Site dedicated to German U-boat enthusiasts, has been effusive on the authenticity of the book.

Cayman Gold is available for \$21.95 plus \$5 for shipping and handling. For ordering or information, contact the Writer's Book Club of America, 8930 Hazen Street, Houston, TX 77036 or visit the author's Web Site on the Internet at <http://ourworld.compuserve.com/homepage/wbcoa>.





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skin diver

Zero Vis and a Flashing Barracuda Cause a Panicky Retreat for a Teenage Diver Who Didn't Wait for Dad

BY MARIE KIRCHERER

I was 12 years old and had recently received my junior scuba certification. I had been diving with my dad for a few years. Our entire family participated in diving events together. My brothers, Jim and Clay, who were one and two years older, had been certified for a couple of years. Dad had been diving for years and had acquired good skills. Jim and I had logged numerous dives but all in good conditions.

We had planned a dive off the Florida Keys in an area parallel to Long Key called Hawk Channel. That day the seas were rough and on the way to the site Dad warned us the visibility would be low and to stay together during the dive. Clay joked about being able to see so little that we would have to follow our bubbles to find the surface.

We arrived at the site and Dad put a safety line down. Jim and I geared up quickly but Mom, Dad and Clay moved slower. Before entering the water, I checked my regulator by inhaling a few times to ensure it was functioning properly. I was following the pre-dive procedure I had learned but was rushing with anticipation. When Jim and I were ready we couldn't wait any longer for Dad. We entered the water, me gently to avoid attracting Barracuda (these fish scared me) and Jim, like a teenage boy, with a splash!

When the bubbles cleared, I looked around in shock. The murk was so thick I couldn't see anything! I turned to Jim and he was gone—hidden somewhere behind clouds of suspended sand. Clearing my ears I descended and soon touched down on the bottom. I looked for our safety line—nothing. I looked up for the boat and saw nothing, even though we were only in 15 to 20 feet of water. I noticed how fast I was breathing as the bubbles continuously rolled out of my

regulator, rising out of sight within seconds. I was about to panic when something hit me from above. It was Jim! He had the same dismayed look on his face. We held hands and began to look for the others. This was a major mistake. We should have returned immediately to the surface instead of distancing ourselves



from the boat. We also failed to recognize there was a strong current.

Out of the corner of my eye I saw a silvery flash. I knew it was a Barracuda. It was hanging there as if it were mounted on the suspended sand. Suddenly, it was gone, leaving only a flash of silver. Its presence made my heart pump and fear welled up inside me. At least I had Jim there. I knew he would protect me.


By this time we didn't know where we were. We couldn't see the others and we had no compass. Confused, Jim signalled me to ascend to look for the boat. When we reached the surface, the wind and waves threw water in our faces. We couldn't see anything. Finally, Jim pointed to a small object floating a great distance away and said, "Let's get back to the boat." The sea was too rough to surface swim so we returned to the bottom. Swimming in a straight line with no visibility, however, proved harder than we thought.

We swam a good distance, knowing we should only surface when we were close to the boat. When it seemed we had swum far enough, Jim again signaled ascent. We surfaced in the direction we were heading and found we were no closer to the boat than we were originally

and, on top of that, the boat was in a different direction than we were heading. For a short time I thought the boat was drifting. The seas were so rough there was no way we could catch it if it was. My heart pounded, the salt water stung my eyes and the excitement and fitful swimming had me breathing my air supply fast. I knew I needed to conserve air and breathe slower. We returned to the bottom to try again.

The pressure was on; either we would panic and face disaster or we would remain calm and use our skills to overcome this frightening situation. Jim and I checked our gauges. Since we still had quite a bit of air, we opted not to ditch our gear and try to surface swim but instead try to maintain a proper U/W bearing.

When we finally got close enough to the boat, Jim sputtered through the waves, "Let's swim for it!" We began fighting the waves with our heavy and awkward gear. I considered dropping my weightbelt but Jim didn't, so I swam with the extra weight. The waves only gave us an occasional view of the boat. My legs burned from the vigorous swimming and, when we neared the boat, I reached for the dive platform as if it were a life preserver thrown to a drowning child—it was in a way. I climbed on board and my legs went to rubber. We were safe! We were reunited with our family and decided we had had enough of Hawk Channel and were lucky to be alive.

From this near catastrophe, I learned some valuable lessons: (1) A junior diver should always be accompanied by a more experienced diver. (2) Waves, current and visibility should be determined prior to leaving safety. (3) A plan should be made in case of separation during a dive. (4) The buddy system is for emotional support as well as physical assistance. (5) Staying calm and avoiding panic really does save lives. 

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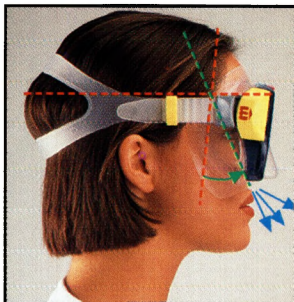


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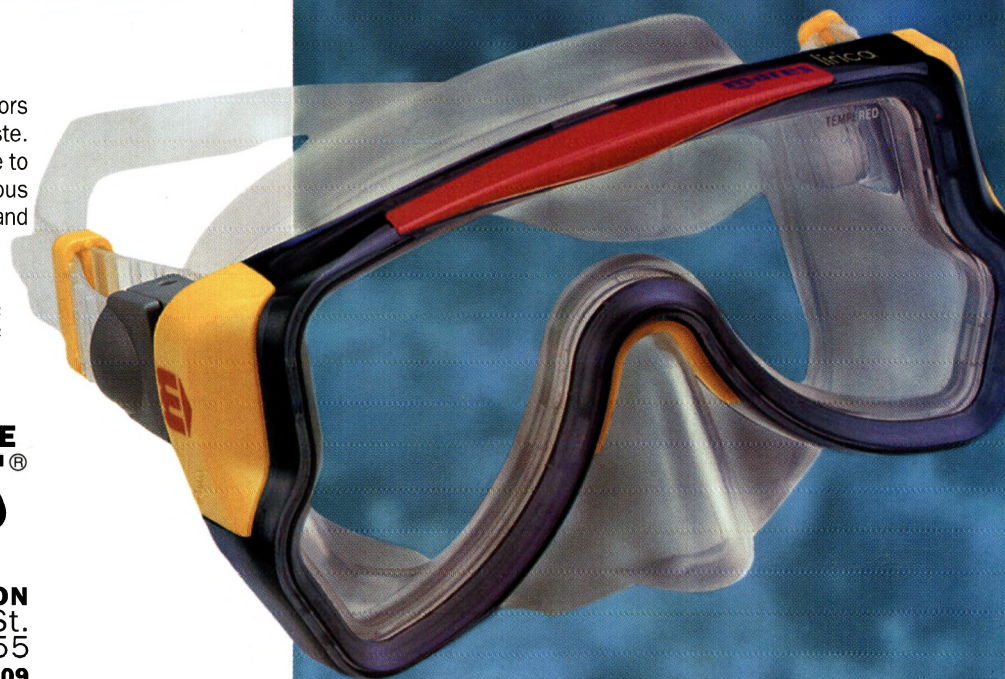
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